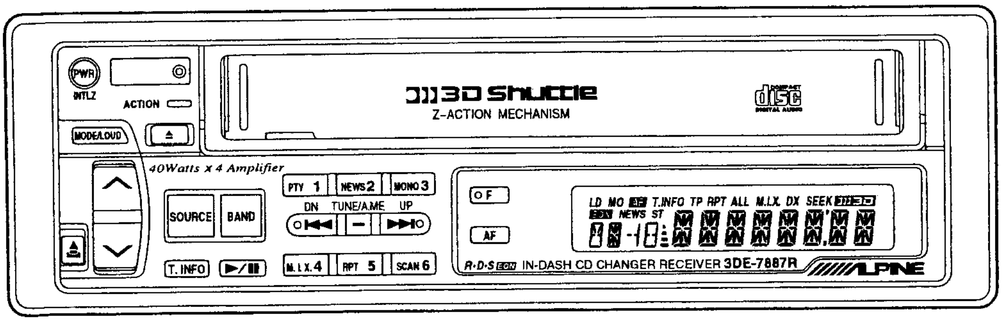
ALPINE

SERVICE MANUAL

FM/MW/LW/RDS In-Dash CD Changer Receiver

COMPACT disc DIGITAL AUDIO

- The model described in this manual is developed from Model 3DE-7886R. For information that is not mentioned in this service manual, refer to the Service Manual • 3DE-7886R (Part No. 68E26586S01).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INTLZ
ACTION
MODE/LOUD
3D Shuttle
Z-ACTION MECHANISM
40Watts x 4 Amplifier
PTY 1
NEWS 2
MONO 3
DN TUNE/A.ME UP
SOURCE
BAND
T.INFO
M.I.X. 4
RPT 5
SCAN 6
OF
AF
LD MO T.INFO TP RPT ALL M.I.X. DX SEEK
NEWS ST
R·D·S IN-DASH CD CHANGER RECEIVER 3DE-7887R
ALPINE

3DE-7887R

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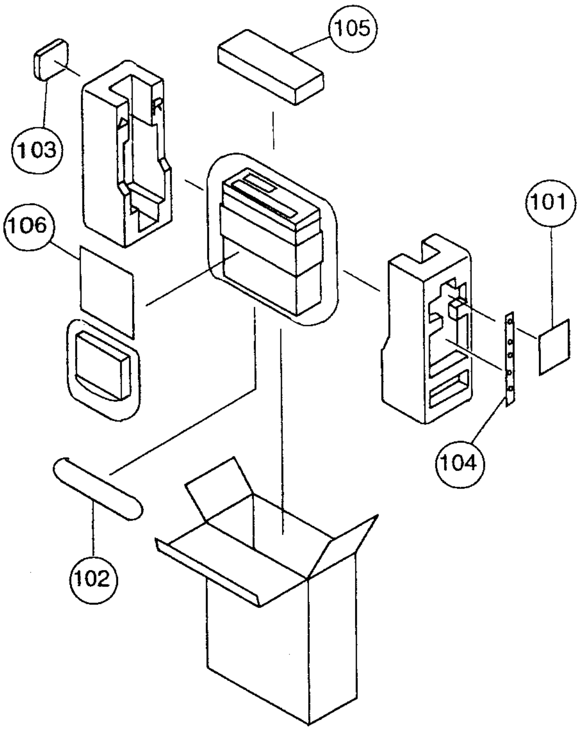
Refer to the Service Manual •
3DE-7886R (Part No. 68E26586S01).

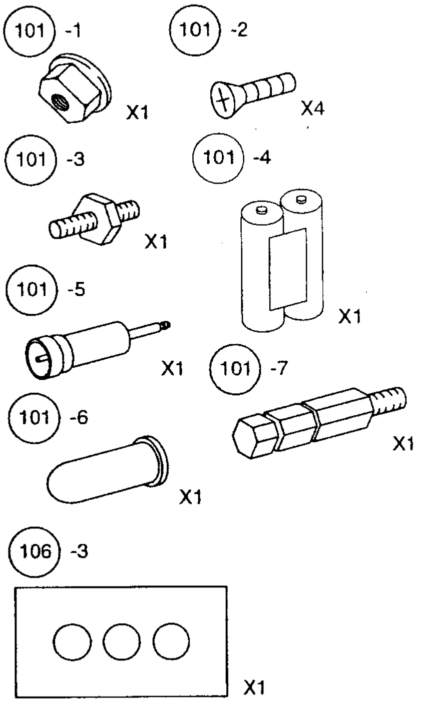
NOTE : Due to continuing product improvement, specifications and designs are subject to change without notice.

Packing Assembly Parts List

Symbol No.	Part No.	Description
101-1	02B47353F01	Nut, Hex. (M5)
101-2	03S72235F13	Screw, Countersink (M5X8)
101-3	46A42363F01	Stud, Bolt
101-4	60T55630W01	Battery, MGN R03 (NB) UM-4
101-5	01T15394Y02	Antenna, JASO-ISO
101-6	36A11113W01	Cap, Rubber (A)
101-7	03A11112W01	Bolt, Hex. (M5)
102	01T15359Y06	Assy., ISO Connector
103	01T00716K02	Assy., Remocon
104	07B64552F01	Bracket, Strap Receiver
105	15D71506W02	Carrying, Case
106-1	68P21523Y06	Owner's Manual
106-2	68P21523Y07	Owner's Manual I/G/S
106-3	54B50936W06	Label, Caution/Round

Packing Method View





Specifications (Only Difference)

NOTE : Refer to the Service Manual • 3DE-7886R (Part No. 68E26586S01) for description not mentioned in this manual.

<GENERAL>

Power Output (T.H.D. 10%) /Impedance 16W/ch/4ohm

NOTE : Due to Continuing product improvement, specifications and designs are subject to change without notice.

Parts Layout on P.W.Boards and Wiring Diagram (3/4) (Only Difference)

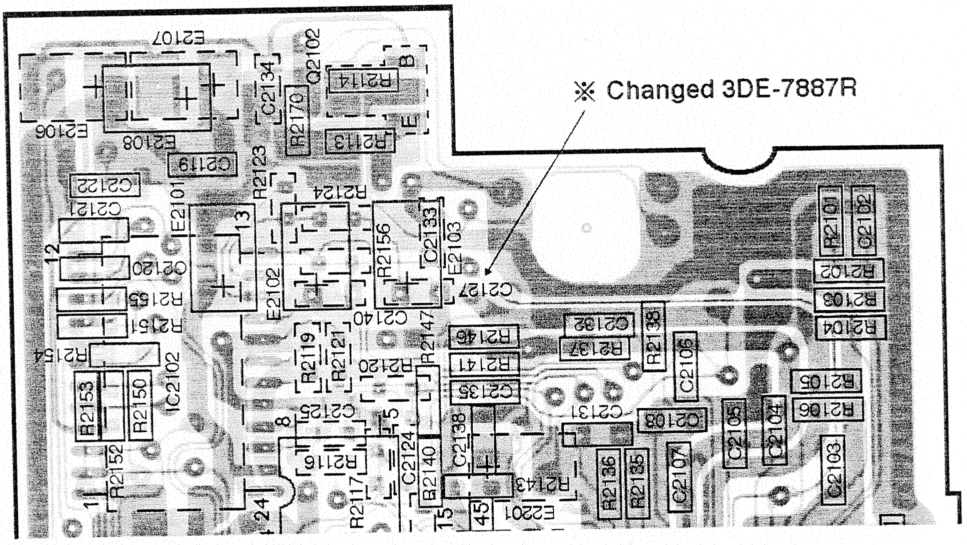
1

NOTE : Refer to the Service Manual · 3DE-7886R (Part No.68E26586S01) for description not mentioned in this manual.

2

CD - LSI P.W.Board (Foil Side View)

3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E2106
E2108
C2134
Q2102
R2170
R2114
R2113
B
E
C2119
C2122
C2121
E2101
R2123
R2124
13
12
C2120
R2155
R2151
R2154
R2153
R2150
IC2102
R2152
E2102
R2156
C2133
E2103
C2127
C2140
R2119
R2121
R2120
R2147
C2125
R2116
R2117
C2124
R2140
C2138
R2143
E2201
R2146
R2141
C2135
C2132
R2137
R2138
C2106
C2131
C2108
C2105
C2104
R2136
R2135
C2107
C2103
R2101
Q2102
R2102
R2103
R2104
R2105
R2106
24
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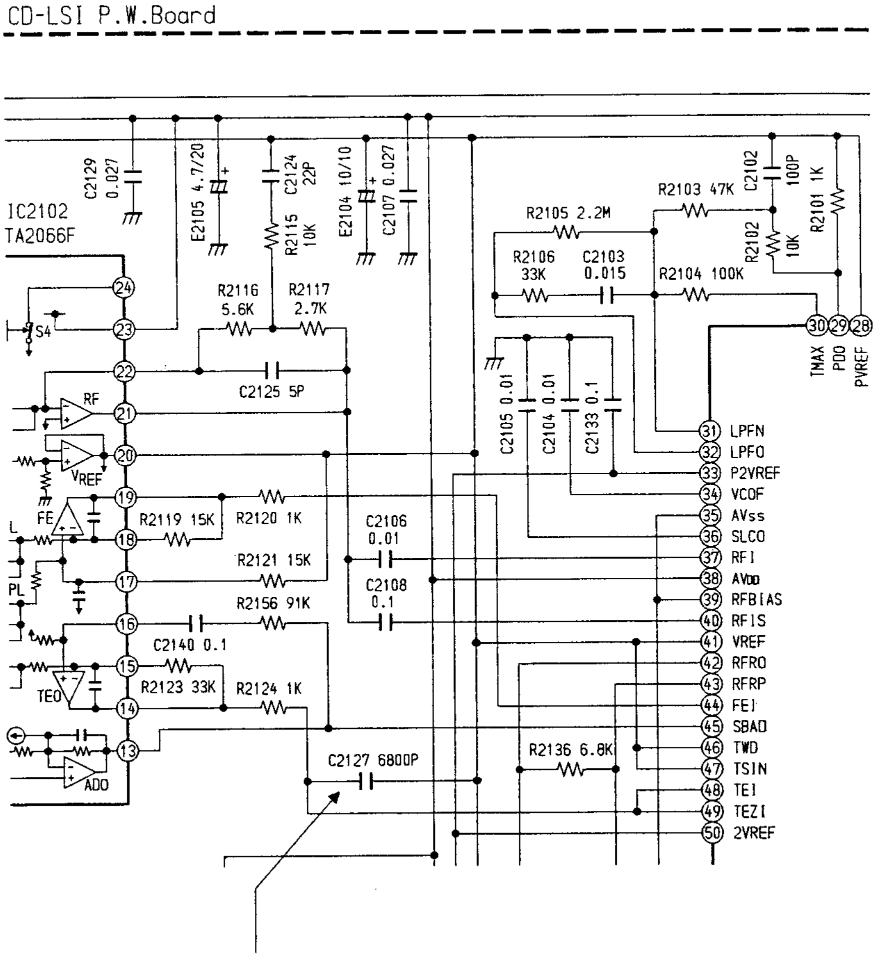
5

Gray Color Pattern :Component Side Pattern
Blue Color Pattern :Foil Side Pattern

A B C

Schematic Diagram (4/4)(Only Difference)

NOTE: Refer to the Service Manual · 3DE-7886R
(Part No.68E26586S01)for description not
mentioned in this manual.


CD-LSI P.W.Board
IC2102
TA2066F
C2129
0.027
E2105 4.7/20
C2124
22P
R2115
10K
E2104 10/10
C2107 0.027
R2116
5.6K
R2117
2.7K
C2125 5P
S4
RF
VREF
FE
L
PL
TEO
ADO
R2119 15K
R2120 1K
R2121 15K
R2156 91K
C2140 0.1
R2123 33K
R2124 1K
C2106
0.01
C2108
0.1
C2127 6800P
R2105 2.2M
R2106
33K
C2103
0.015
R2103 47K
C2102
100P
R2102
10K
R2101 1K
R2104 100K
C2105 0.01
C2104 0.01
C2133 0.1
R2136 6.8K
TMAX
PDO
PVREF
LPFN
LPFO
P2VREF
VCOF
AVss
SLCO
RFI
AVDD
RFBIAS
RFIS
VREF
RFRO
RFRP
FEI
SBAD
TWD
TSIN
TEI
TEZI
2VREF
IC2101
TC9296AF
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*Changed 3DE-7887R

3DE-7887R

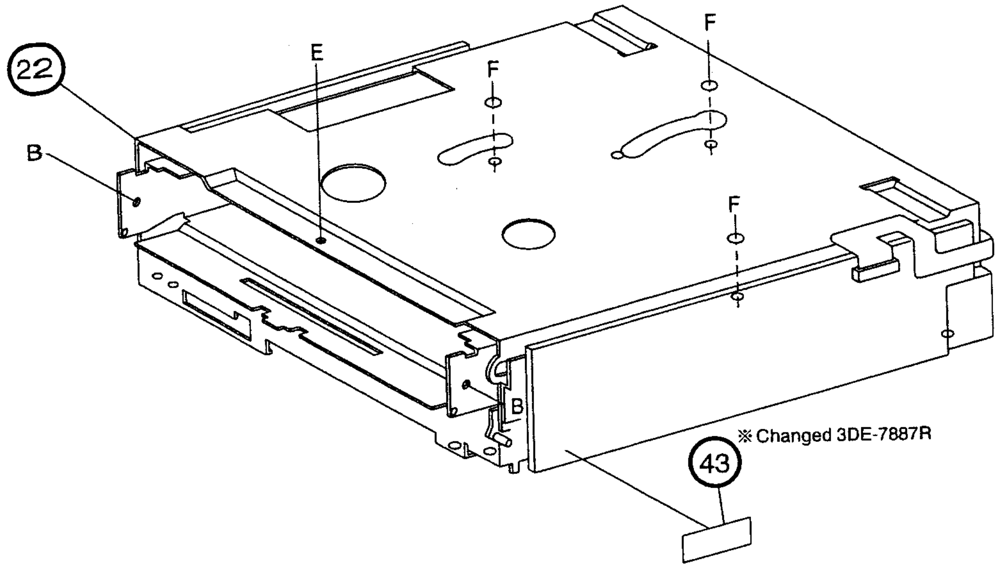
Electrical Parts List (Only Difference)

NOTE : For the parts not mentioned, refer to the Service Manual for 3DE-7886R (Part No. 68E26586S01).

Model	3DE-7886R		3DE-7887R	
Symbol No.	Part No.	Description	Part No.	Description
Main P.W.Board				
IC's				
IC205	51T92001F21	XRA4560F	51T15420Y01	BA4560F-E2 -SE2
IC301	51T85153W01	TDA7384	51T15021Y01	TDA7386 -ZS
Capacitors				
E301	23S75372W12	ELY., 0.33μF / 50V	23T95115W01	CAP,AD R33-1H -R2
E303	23S75372W15	ELY., 1μF / 50V	23T95117W01	CAP,ELY 1R0-1H -H2
E304	23S75372W12	ELY., 0.33μF / 50V	23T95115W01	CAP,AD R33-1H -R2
E307	23S75372W12	ELY., 0.33μF / 50V	23T95115W01	CAP,AD R33-1H -R2
E308	23S75372W12	ELY., 0.33μF / 50V	23T95115W01	CAP,AD R33-1H -R2
CD-LSI P.W.Board				
Capacitor				
C2127	—	—	08S65128F67	CAP,CER. 682K-B1H -CP
Miscellaneous				
M2101	01V84800W95	Assy., Loading Motor (7V-370mA)	01V84900W01	Assy., Loading Motor (7V-370mA)
M2102	01V84800W95	Assy., Tray Motor (7V-370mA)	01V84800W94	Assy., Tray Motor (7V-370mA)

Exploded View (Cabinet) (1/2) (Only Difference)

NOTE : Refer to the Service Manual・3DE-7886R (Part No. 68E26586S01) for description not mentioned in this manual.



Cabinet Assembly Parts List (Only Difference)

NOTE : For the parts not mentioned, refer to the Service Manual for 3DE-7886R (Part No. 68E26586S01).

Model	3DE-7886R			3DE-7887R		
Symbol No.	Index	Part No.	Description	Index	Part No.	Description
1	4-A	01V11600Y13	Assy., Nose Unit	4-A	01V24900Y61	Assy., Nose Unit
16	1-C	03A48066W02	Screw, Transport (M3X34.3)	1-C	03A48066W03	Screw, Transport (M3X34.3)
22	2-E	81D91137W01	3D Deck Mechanism, DS44L01A	2-E	——	3D Deck Mechanism, DS44L01A
32	5-B	13D80970W07	Assy., Nosepiece	5-B	13D80970W16	Assy., Nosepiece

CD Deck Mechanism Assembly Parts List

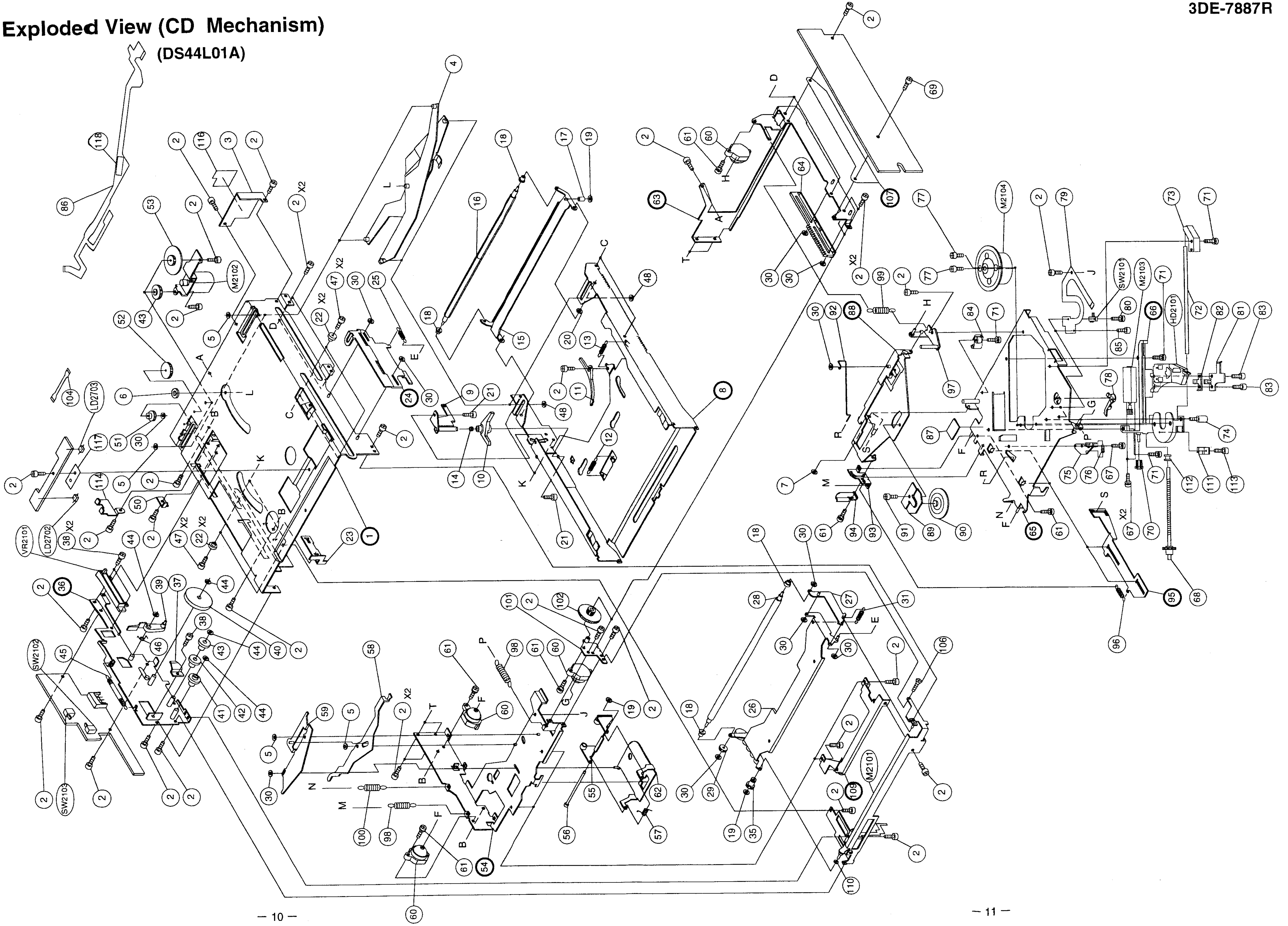
NOTE:Parts without part number are not supplied.

Symbol No.	Index	Part No.	Description
2		03S94385F19	Screw, Pan Nylok (M2X2.5)
3		07A81784W01	Bracket, Rear Corner
4		01B81195W01	Assy., Riv. Lever PTG
5		04B41345P22	Washer, Lock (M2.6)
6		04B41345P05	Washer, Lock (M3.5)
7		04B41345P02	Washer, Lock (M1.7)
9		01A81188W01	Assy., Riv. Bracket Tray
10		45A80903W01	Arm, Magazine
11		43B80926W01	Spacer, Disc
12		41B81272W02	Spring, Coil
13		41B81272W07	Spring, Coil
14		41A81207W01	Spring, Arm Magazine
15		01B81196W01	Assy., Riv. Bracket Roller Upper
16		01A81172W01	Assy., Shaft Roller Upper
17		47A80928W01	Roller, Disc Guide
18		43A31616W01	Bush
19		04B41345P42	Washer, Lock (M1.2)
20		04S40075G15	Washer (M3.6)
21		03S94385F07	Screw, Pan Nylok (M2X2)
22		43A81198W01	Sleeve
23		45A80863W01	Slide, Eject Magazine
25		41B81272W03	Spring, Coil
26		01C81197W01	Assy., Riv. Bracket Roller Under
27		01A81249W01	Assy., Riv. Bracket RR
28		01A81173W01	Assy., Shaft Roller Under
29		44A80895W01	Gear, Roller Under
30		04B41345P13	Washer, Lock (M1.7)
31		41B81272W04	Spring, Coil
35		44A80893W01	Gear, Middle
37		41A80865W01	Spring, Arm Magazine
38		03S94385F28	Screw, Pan Nylok (M1.7X2)
39		45A80885W01	Arm, Eject Switch
40		45B80879W01	Cam, Loading
41		44B80880W01	Gear, Loading (A)
42		44B80881W01	Gear, Loading (B)
43		44A80867W01	Gear, Idle (A)
44		04B41345P04	Washer, Lock (M2.6)
45		41B81272W08	Spring, Coil
46		41A81382W01	Spring, Switch Magazine
47		03S94385F08	Screw, Pan Nylok (M2X3)
48		04C42091G11	Ring, "E" (M2.5)
50		07A81365W01	Bracket, Tray Stopper
51		44A80868W01	Gear, Idle (B)
52		44A80869W01	Gear, Idle (C)
53		44A80870W01	Gear, Cam
55		01A81823W01	Assy., Riv. Disc Guide
56		47A31658W01	Shaft, Arm
57		41A32137W01	Spring, Disc Guide
58		45A80908W01	Lever, Drive Lock
59		45A80922W01	Lever, Drive Lock (B)
60		75C80020W01	Damper, DPH2
61		03S40014G82	Screw, W/Washer (M2X3.5)
62		01A81189W01	Assy., Riv. Bracket Guide
64		44B80916W01	Rack, Timing
67		03S40014G66	Screw, W/Washer (M2X3.5)
68		01V84900W37	Assy., Lead Screw
69		03A91058W01	Screw, Special (M2X3.4)
70		44A81241W01	Gear, Middle
71		03S40014G86	Screw, W/Washer (M2X7.5)
72		47A50698W01	Shaft, Pick-Up
73		07A81236W01	Bracket, Shaft
74		47A81245W01	Shaft, Screw Drive
75		07B81235W01	Bracket, Rod Lifter
76		41B81272W09	Spring, Coil
77		03S94385F57	Screw, Pan Nylok (M1.7X3.5)
78		45A81239W01	Lever, Switch
79		84T95103W01	FPC Switch P.W.Board
80		03S40014G02	Screw, W/Washer (M2X6)
81		41A81243W01	Spring, Nut (A)
82		44A81238W01	Spring, Nut (B)
83		03S94385F02	Screw, Pan Nylok (M1.7X3)
84		07A81237W01	Bracket, FPC PD/LD
85		03S72235F76	Screw, Pan (M2X2)
86		84T85390W01	FPC Pick-Up P.W.Boar
89		07A80919W01	Bracket, Clamper Top
90		43B81255W01	Table, Clamper
91		03S94385F54	Screw, Pan Nylok (M1.7X1.4)
92		47A81252W01	Rod, Lifter
93		45A80932W01	Cam, Clamper
94		07A90578W01	Bracket, Guide Disc
96		41B81272W01	Spring, Coil
97		01A81175W01	Assy., Riv. Bracket Arm Clamper
98		41B81272W05	Spring, Coil
99		41B81272W06	Spring, Coil
100		41B81272W10	Spring, Coil
101		01A81171W01	Assy., Riv. Damper FR
102		44A80912W01	Gear, Timing
106		03S94385F36	Screw, Countersink Nylok (M2X3)
110		75A10147Y01	Rubber, Ring
111		07A10361Y01	Stopper, Shaft
112		43A10362Y01	Bush, Bracket
113		03S70494F15	Screw, Pan (M2X4)
114		07A90638W01	Bracket, Cover DIN
116		14A10981Y01	Spacer, FPC
117		14A90285W01	Insulator, P.W.Board
118		14A11239Y01	Spacer, Pick-Up

Symbol No.	Index	Part No.	Description

Exploded View (CD Mechanism)

(DS44L01A)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X2
VR2101
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434

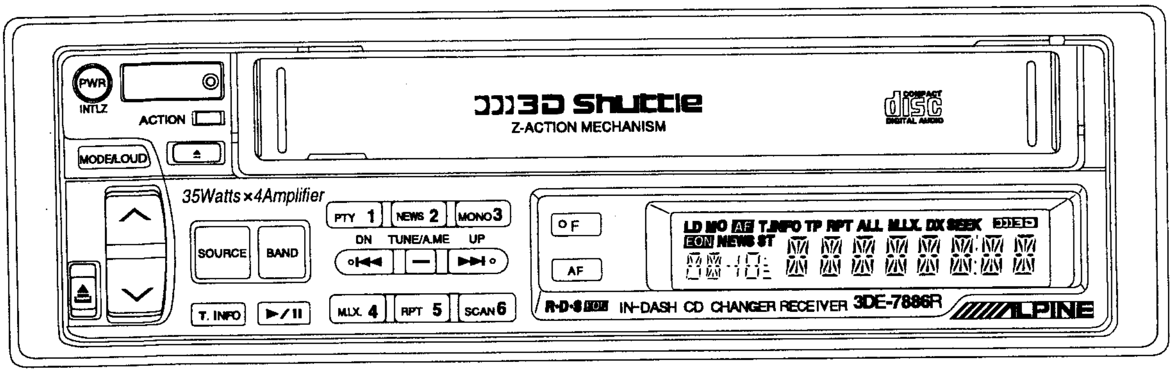
ALPINE

SERVICE MANUAL

FM/MW/LW/RDS In-Dash CD Changer Receiver

COMPACT
disc
DIGITAL AUDIO

- For the CD deck mechanism parts (DS44L01A) of this model, refer to the Service Manual · DS-L SERIES ADDENDUM & REVISED (Part No. 68E26409S01).


PWR
INTLZ
ACTION
MODE/LOUD
3D Shuttle
Z-ACTION MECHANISM
COMPACT disc DIGITAL AUDIO
35Watts×4Amplifier
PTY 1
NEWS 2
MONO3
DN
TUNE/A.ME
UP
SOURCE
BAND
T. INFO
M.I.X. 4
RPT 5
SCAN6
F
AF
LD MO AF T.INFO TP RPT ALL M.I.X. DX SEEK 3D
EON NEWS ST
R·D·S EON IN-DASH CD CHANGER RECEIVER 3DE-7886R
ALPINE

3DE-7886R

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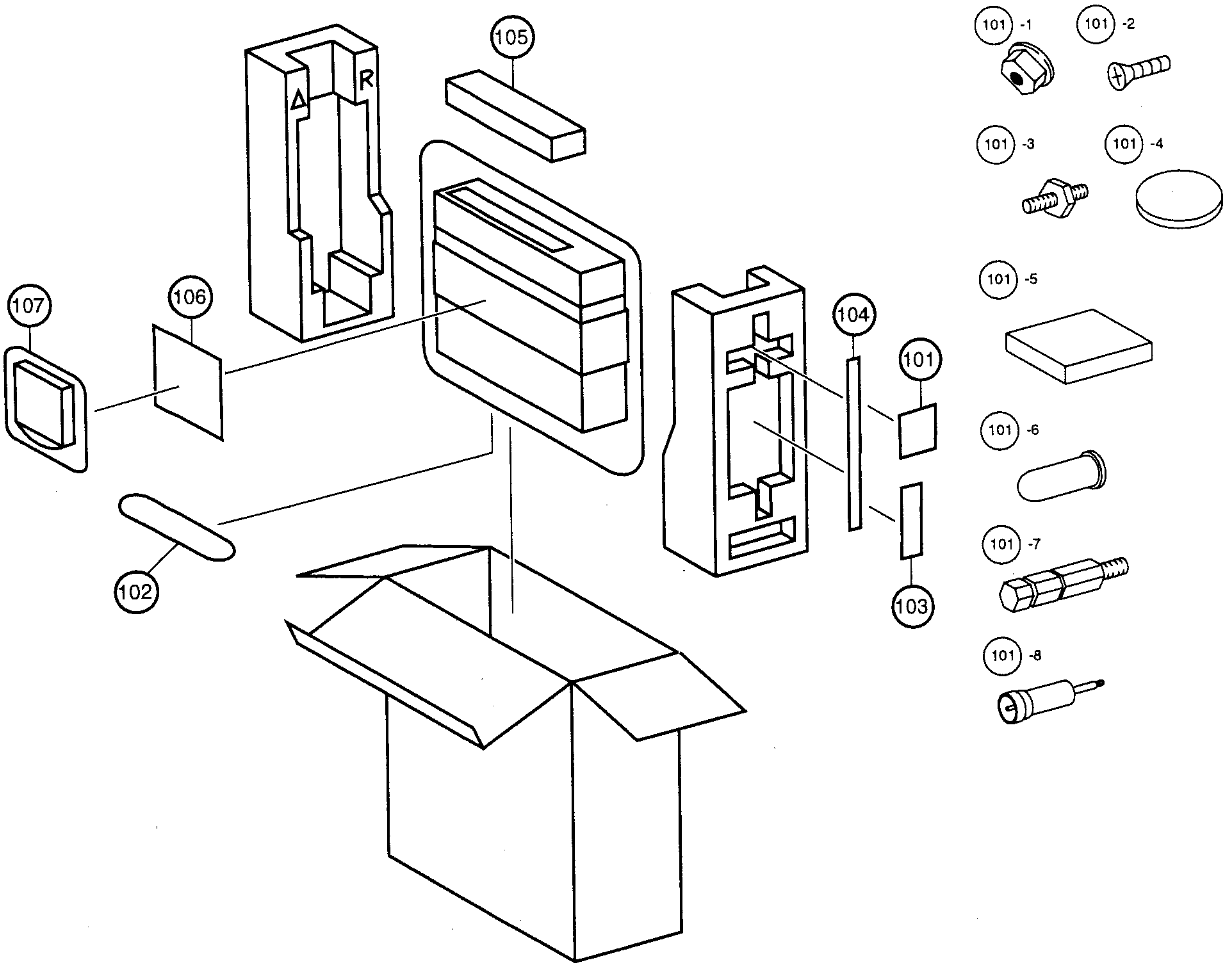
Packing Assembly Parts List

Symbol No.	Part No.	Description
101	01V13600Y25	Assy., Kit (ISO)
101-1	02B47353F01	Nut, Hex. (M5)
101-2	03S72235F13	Screw, Countersink (M5X8)
101-3	46A42363F01	Stud, Bolt
101-4	60S70585F01	Battery, Lit. 3V (CR2025)
101-5	75S50638W69	Cushion, Rubber
101-6	36A11113W01	Cap, Rubber (A)
101-7	03A11112W01	Bolt, Hex. (M5)
101-8	01T15394Y01	Antenna, JASO-ISO
102	01T15359Y01	Assy., ISO Connector

Symbol No.	Part No.	Description
103	01T75235W05	Assy., Card Remocon
104	07B64552F01	Bracket, Strap Receiver
105	15D71506W02	Carrying, Case
106-1	68P91508W77	Owner's Manual
106-2	68P91508W78	Owner's Manual I/G/S
107	01D81040W10	Assy., Magazine DS

Packing Method View



Specifications

<CD SECTION>

System	Optical (Compact Disc System)
Quantizing Bit Number	16bit Linear system
Channels	2 Channels
Channel Balance (1kHz)	0±3dB
Distortion (1kHz)	0.1%
Frequency Response (Ref. 1kHz)	17Hz : 0±3dB
	127Hz : 0±2dB
	10.007kHz : 0±2dB
	19.997kHz : 0±4dB
S/N Ratio	85dB
Separation (1kHz)	55dB
De-Emphasis (Ref. 1kHz)	4kHz : -20±3dB
	16kHz : -20±3dB

<FM RADIO>

Intermediate Frequency	10.7±0.1MHz
Frequency Range	87.5～108MHz
Usable Sensitivity (Mono, 30dB S/N, at 98.1MHz)	17.2dBf
-3dB Limiting Sensitivity (at 98.1MHz)	19.2dBf
Residual Noise (Ref. 400Hz, at 98.1MHz)	25±8dB
S/N Ratio (Stereo, at 98.1MHz)	56dB
Image Rejection (at 106.1MHz)	40dB
IF Rejection (at 90.1MHz)	60dB
Distortion (Input 60dB μ, at 98.1MHz)	1%
Frequency Response (Ref. 400Hz)	100Hz : 0±3dB
	10kHz : -12±3dB
Stereo Separation (1kHz, at 98.1MHz)	20dB
PS Sensitivity (at 98.1MHz)	36.2dBf

<MW RADIO>

Intermediate Frequency	450kHz
Frequency Range	531～1,602kHz
Usable Sensitivity (20dB S/N, at 999kHz)	36dB
S/N Ratio (at 999kHz)	44dB
Image Rejection (at 1,404kHz)	50dB
IF Rejection (at 603kHz)	60dB
Distortion (at 999kHz)	1.5%
Frequency Response (Ref. 400Hz, at 999kHz)	100Hz : -3±4dB
	4kHz : -12+6, -12dB

<LW RADIO>

Intermediate Frequency	450kHz
Frequency Range	153~281kHz
Usable Sensitivity (20dB S/N, at 216kHz)	42dB
S/N Ratio (at 216kHz)	42dB
Distortion (at 216kHz)	1.5%
Frequency Response (Ref. 400Hz, at 216kHz)	100Hz : -3±4dB 4kHz : -12+6, -12dB

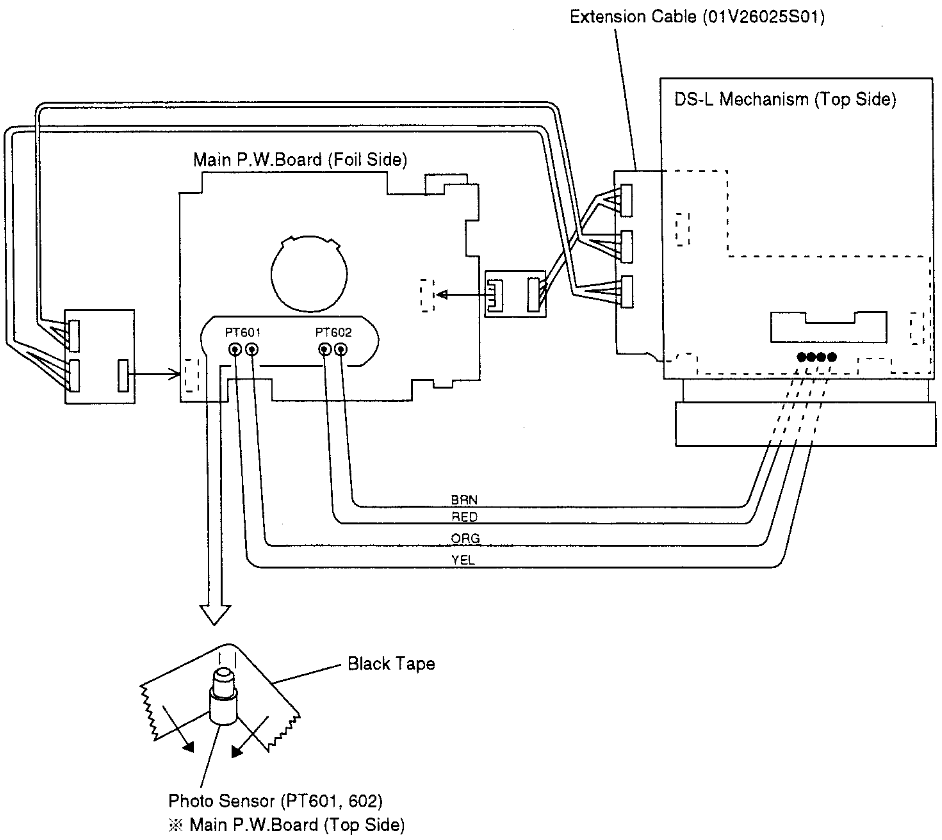
<GENERAL>

Power Supply	DC14.4V
Power Output (T.H.D. 10%) /Impedance	14W/ch/4ohm
Pre Output/Impedance	1.7V/10Kohm
Semiconductors	28IC's, 52Transistors, 25Diodes, 14Zener Diodes
Dimensions (W×H×D)	Chassis : 178×50×153mm Nose : 170×46×18mm
Weight	1.8kg

NOTE : Due to Continuing product improvement, specifications and designs are subject to change without notice.

Extension Cable

- When testing the operating status of the model 3DE-7886R, connect an Extension Cable as shown in the figure below.


Extension Cable (01V26025S01)
DS-L Mechanism (Top Side)
Main P.W.Board (Foil Side)
PT601
PT602
BRN
RED
ORG
YEL
Black Tape
Photo Sensor (PT601, 602)
※ Main P.W.Board (Top Side)

NOTE : After connecting the Extension Cable, cover the PT601, 602 on the Main P.W.Board using such a black tape etc., so the light would not hit. (Using the photo sensor supplied in the Extension Cable.) When removing the Extension Cable, remove always the black tape, etc.

Servo Monitor (Part No. 01E20845S01)

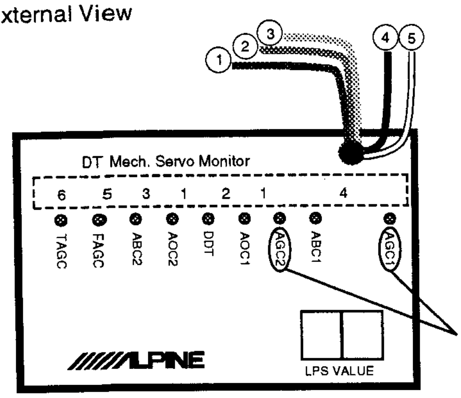
I. Purpose

DS-L mechanism built-in 3DE-7886R performs digital signal processing in the insideof Digital Servo LSI and the outside alignment circuit builds in to this Digital Servo LSI and each alignments are automatic.

This DT Mech. Servo Monitor is jig for the automatic alignment circuitry.
Please refer to the following list for the reference;

1. LED indicates the alignment.
2. Diagnosis of automatic alignment.
3. LED indicates a failure item for easy failure analysis of servo circuitry.

External View

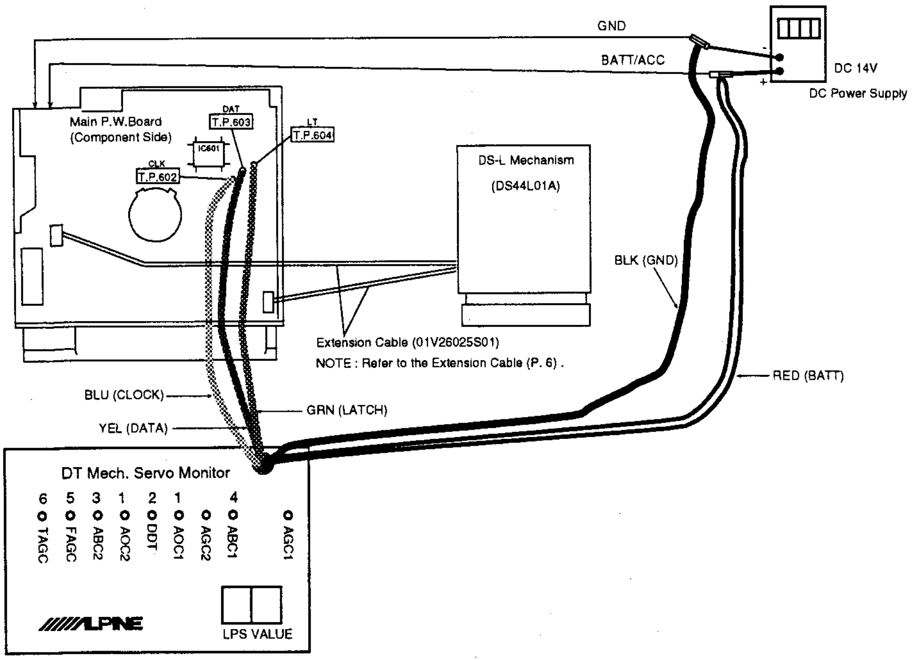

①
②
③
④
⑤
DT Mech. Servo Monitor
6 5 3 1 2 1 4
TAGC
FAGC
ABC2
AOC2
DDT
AOC1
AGC2
ABC1
AGC1
ALPINE
LPS VALUE

	①	②	③	④	⑤
Wire Color	Yellow	Green	Blue	Black	Red
Name	Data	Latch	Clock	Ground	Battery

※ For this digital servo LSI, no adjustment was made.

* The numbers of the automatic alignment sequence.

II. Connection Points and Connection Method


GND
BATT/ACC
DC 14V
DC Power Supply
-
+
Main P.W.Board
(Component Side)
DAT
T.P.603
LT
T.P.604
IC601
CLK
T.P.602
DS-L Mechanism
(DS44L01A)
BLK (GND)
Extension Cable (01V26025S01)
NOTE : Refer to the Extension Cable (P. 6) .
RED (BATT)
BLU (CLOCK)
GRN (LATCH)
YEL (DATA)
DT Mech. Servo Monitor
6 5 3 1 2 1 4
TAGC
FAGC
ABC2
AOC2
DDT
AOC1
AGC2
ABC1
AGC1
ALPINE
LPS VALUE

Connect each of the wires to the Test point as illustrated in the diagram.

* Be very careful not to shorts the test points since they are located close together.

* DT Mech. Servo Monitor can be used for the DS-L mechanism.

III. Operating Specifications

The automatic adjustment operations of the 3DE-7886R are performed by output of the commands of the various adjustment items from the main microprocessor. Adjustments are performed in response to these commands by the digital servo LSI. This servo monitor jig receives the signal returned to the main microprocessor from the digital servo LSI and causes the LED to light or go off. The adjustment condition (of either completed or not yet completed) of the various adjustment items can be checked using the lighting condition of this LED. The following test discs are required for the good/fault judgment:

1. A-BEX TCD-721 (6th track - 1.2mm) : Scratch test disc
2. A-BEX TCD-782 : Signal test disc

Measures to be Taken Corresponding to the LED Indication

1. When a LED other than FAGC or TAGC lights, perform the fault causation analysis using the fault diagnosis chart according to the LED indication.
2. When only the FAGC or TAGC LED turn on a lights (indicating that the focus / tracking fine gain adjustment is not completed) , perform the focus / tracking servo gain adjustment. If the value is within the specification, the adjustment is normal.

i) LED indications

Lit : Fault   Unlit : OK

Adjustment Order	LED Name	Adjustment Order	Contents
1	AOC2	Tracking offset adjustment	Corrects the tracking error value as an offset.
	AOC1	Focus offset adjustment	Corrects the focus error value as an offset.
2	DDT	Disc detection	Detects the presence or absence of a disc.
3	ABC2	Tracking balance adjustment	Corrects the average value of the tracking error as a balance value.
4	ABC1	Focus balance adjustment	Correct until the RF level becomes maximum.
5	FAGC	Focus fine gain adjustment	Introduces external interference and adjusts the focus gain to an appropriate value.
6	TAGC	Tracking fine gain adjustment	Introduces external interference and adjusts the tracking gain to an appropriate value.

Measurements

A. RF Signal Level Measurement

The main beam of the returning light is received by the photodiode and the output voltage is obtained by current-voltage conversion of A+B+C+D.

1. Block Diagram

Measurment disc — Sample player — Oscilloscope

2. Measurement Method
   - (a). Connect the ground terminal of the oscilloscope VRO (TA2066F (IC2102), pin 20) and measure the RFO signal (of TA2066F (IC2102), pin 21).
   - (b). Play the first track of the measurement disc A-BEX TCD-782.
   - (c). Read the peak-to-peak value of the waveform.
     Specification: 1.2+0.3, -0.2V
     * When the value is outside of the specification (i.e., not good), check TA2066F (IC2102) and the pick-up.

B. Jitter Measurement

The standard deviation of the pulse width when a trigger is applied to the rising edge of the 3T component of the RF signal.

1. Block Diagram

Measurment disc — Sample player — Jitter meter

2. Measurement Method
   - (a). Connect the ground terminal of the jitter meter to VRO (TA2066F (IC2102), pin 20) and measure the RFO signal (of TA2066F (IC2102), pin 21).
   - (b). Play the first track of the measurement disc A-BEX TCD-782.
   - (c). Read the indicated value of the jitter meter.
     Specification: 25nS or less
     * When the value is outside of the specification, check TA2066F (IC2102) and the pick-up.

C. Focus Servo Gain Measurement

Measure the focus servo open loop gain in the servo-on (closed loop) condition.

1. Block Diagram

Measurment disc — Sample player — Oscillator and oscilloscope

2. Measurement Method using an Oscillator and an Oscilloscope

(a). Connect OSC output to resistor for gain measurement (100 ohm). (Connect a servo driver side to positive side.)

(b). Connect CH1 of oscilloscope to a servo driver side of resistor for gain measurement (100 ohm). (Connect negative side with GND of set.)

(c). Connect CH2 of oscilloscope to TC9296AF (IC2101) side of resistor for gain measurement (100 ohm). (Connect negative side with GND of set.)

(d). Play back the eighth track of A-BEX TCD-782 disc for measurement. (No sound recording track)

(e). Output frequency (1.2 kHz, 200 mVP-P) from OSC and compare the amplitude of CH1 and CH2 of oscilloscope and convert into dB.

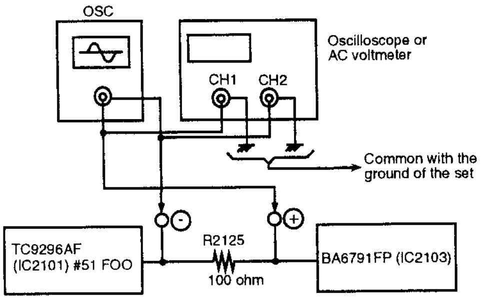
Gain (dB) =20 Log (CH2/CH1)

Specification : Gain Normal if it is within 0±3dB.

* If the specificaiton is out (NG), TC9296AF (IC2101) (Digital Servo LSI) is malfunction.

NOTE: AC voltmeter is available to measurement.

3. Connection (Example)


OSC
Oscilloscope or AC voltmeter
CH1
CH2
Common with the ground of the set
TC9296AF (IC2101) #51 FOO
R2125
100 ohm
BA6791FP (IC2103)

* FOO: Focus drive output

D. Tracking Servo Gain Measurement

Measure the tracking servo open loop gain in the servo-on (closed loop) condition.

1. Block Diagram

Measurment disc — Sample player — Oscillator and oscilloscope

2. Measurement Method using Oscillator and an Oscilloscope

(a). Connect OSC output to resistor for gain measurement (100 ohm). (Connect a servo driver side to positive side.)

(b). Connect CH1 of oscilloscope to a servo driver side of resistor for gain measurement (100 ohm). (Connect negative side with GND of set.)

(c). Connect CH2 of oscilloscope to TC9296AF (IC2101) side of resistor for gain measurement (100 ohm).

(d). Play back the eighth track of A-BEX TCD-782 disc for measurement. (No sound recording track)

(e). Output frequency (1 kHz, 50 mVP-P) from OSC and compare the amplitude of CH1 and CH2 of oscilloscope and convert into dB.

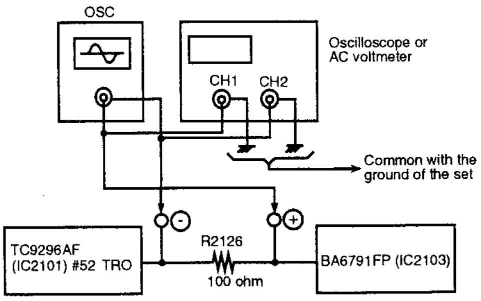
Gain (dB) =20 Log (CH2/CH1)

Specification : Gain Normal if it is within 0±3dB.

* If the specificaiton is out (NG), TC9296AF (IC2101) (Digital Servo LSI) is malfunction.

NOTE: AC voltmeter is available to measurement.

3. Connection (Example)

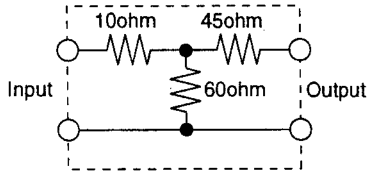

OSC
Oscilloscope or AC voltmeter
CH1
CH2
Common with the ground of the set
TC9296AF (IC2101) #52 TRO
R2126
100 ohm
BA6791FP (IC2103)

* TRO: Tracking drive output

Adjustment Procedures

1. FM SECTION

(1) Dummy Antenna Circuit


10ohm
45ohm
Input
60ohm
Output

For 50 ohm FM Signal Generator

Figure 1

(2) Connections

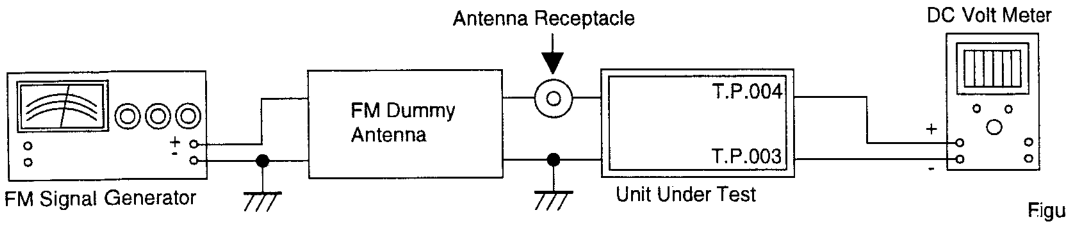

Antenna Receptacle
DC Volt Meter
FM Dummy Antenna
T.P.004
T.P.003
+
-
+
-
FM Signal Generator
Unit Under Test

Figure 2

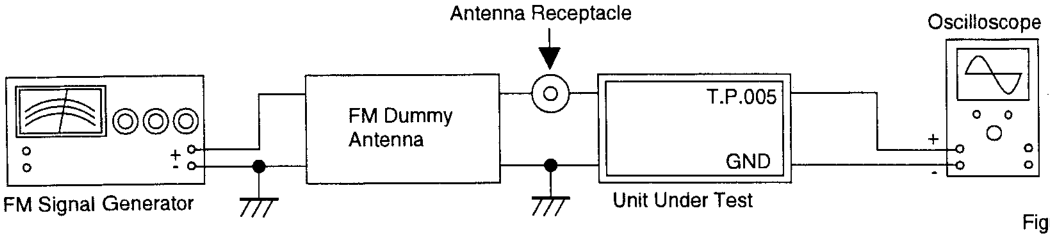

Antenna Receptacle
Oscilloscope
FM Dummy Antenna
T.P.005
GND
+
-
+
-
FM Signal Generator
Unit Under Test

Figure 3

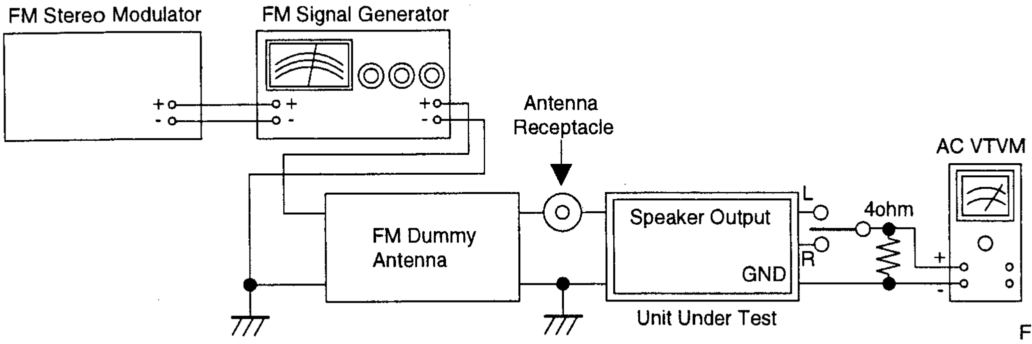

FM Stereo Modulator
FM Signal Generator
+
-
+
-
+
-
Antenna Receptacle
AC VTVM
FM Dummy Antenna
Speaker Output
GND
L
R
4ohm
+
-
Unit Under Test

Figure 4

(3) Control Settings

Power Switch	ON	Bass Control	Center Position
Fader Control	Center Position	Band Switch	FM
Balance Control	Center Position	Others	OFF
Treble Control	Center Position		

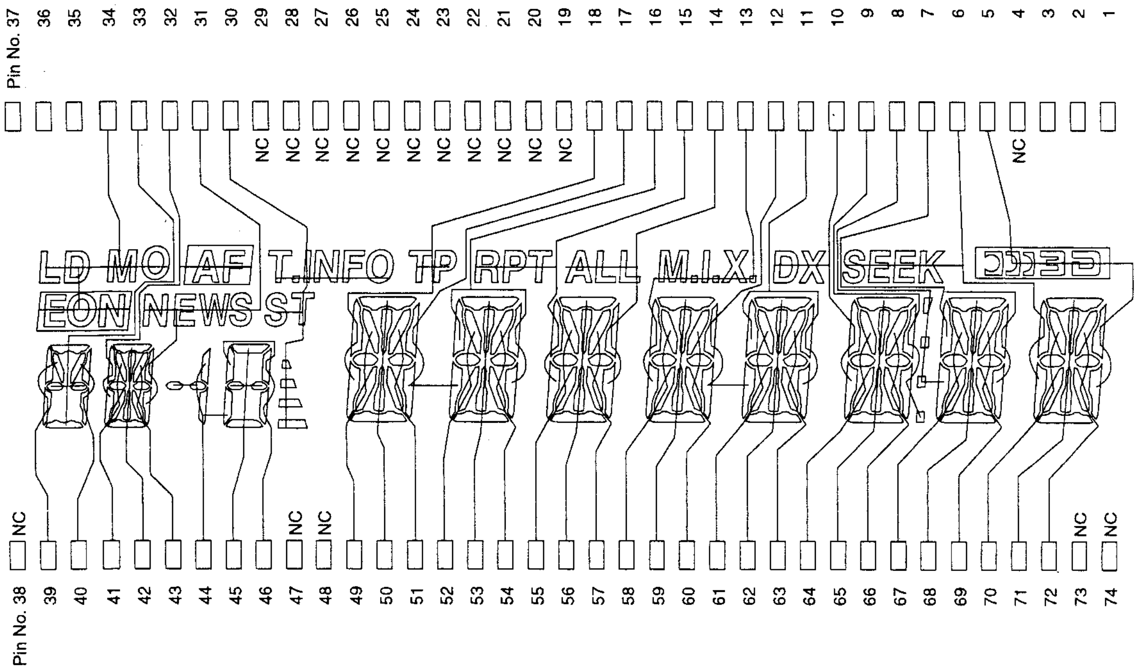
(4) Adjustment Procedures

Step	Description	Connection	Signal Generator	Dial Control	Test Point / P.C.Board Coordinates	Adjustment
1	IF Adjustment	Figure 2	98.1MHz, 72dBμ (Mod. OFF)	98.1MHz	T.P.003 (4-E) T.P.004 (4-E)	Adjust L003 to -35 to -45mV.
2	S-Meter Adjustment	Figure 3	98.1MHz, 46dBμ (Mod. 400Hz, Dev. 40kHz)	98.1MHz	T.P.005 (4-E)	Adjust VR003 to 3±0.1V.
3	Stereo Blend Adjustment (Lch)	Figure 4	98.1MHz, 46dBμ (Stereo, 1kHz, Lch only)	98.1MHz	Speaker Output	Adjust VR004 for Lch and Rch output level difference to be 8±2dB.
4	Stereo Blend Adjustment (Rch)	Figure 4	98.1MHz, 46dBμ (Stereo, 1kHz, Rch only)	98.1MHz	Speaker Output	Proceed same adjustment under step 3.

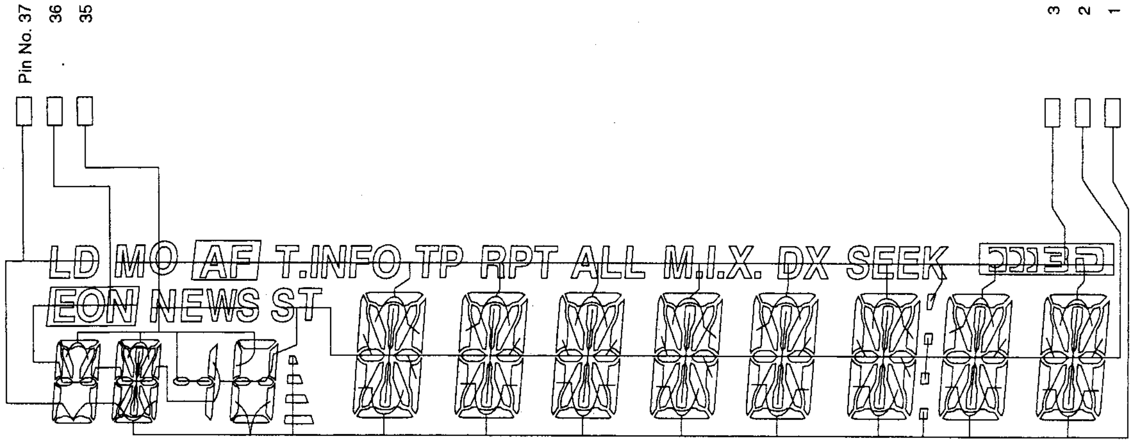
NOTE : For the Test Points (T.P.003~T.P.005), refer to the Parts Layout on P.W.Boards and Wiring Diagram.

LCD Display

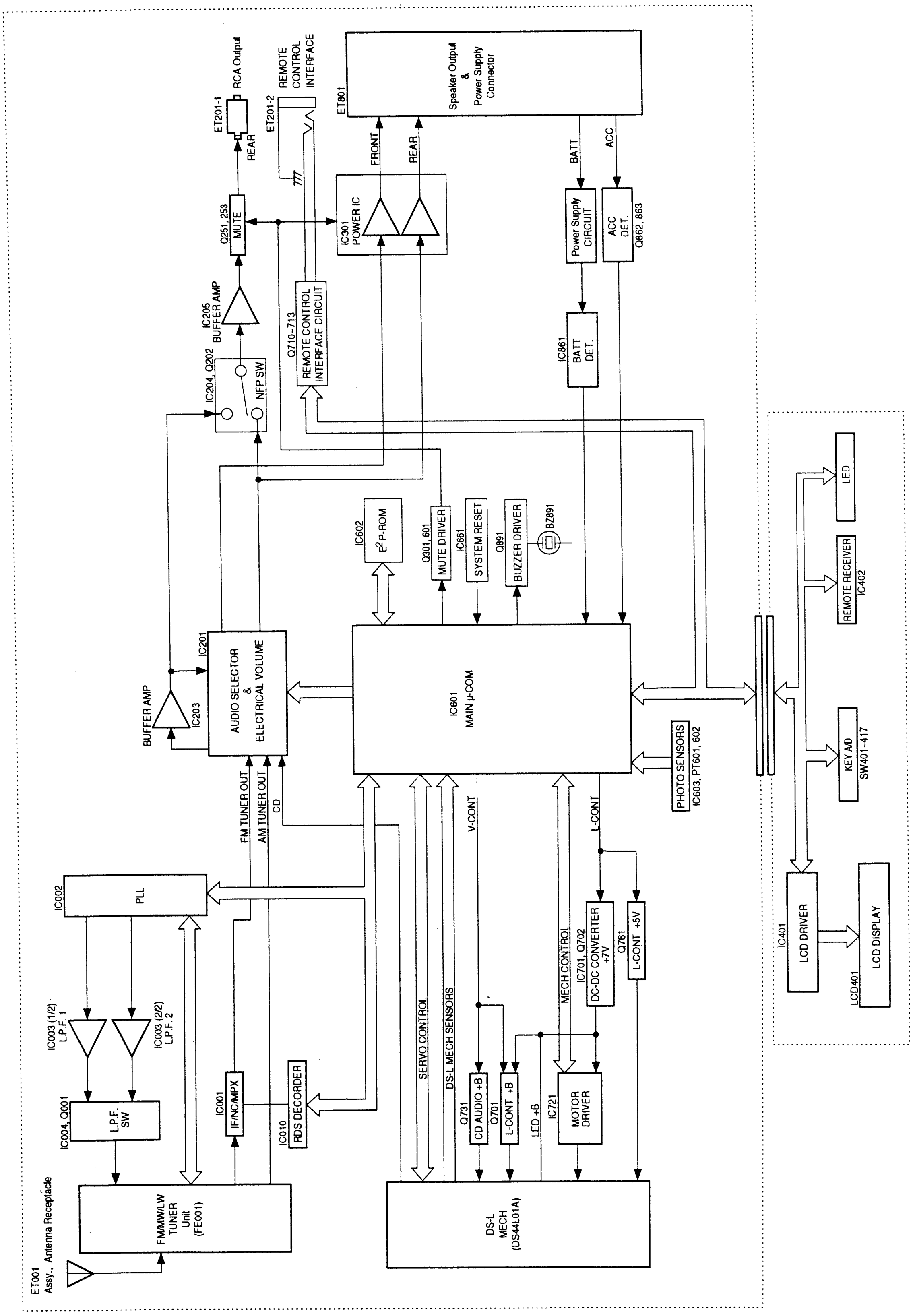
SEGMENT


Pin No. 37
36
35
34
33
32
31
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
NC
LD MO AF T.INFO TP RPT ALL M.I.X. DX SEEK
EON NEWS ST
Pin No. 38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74

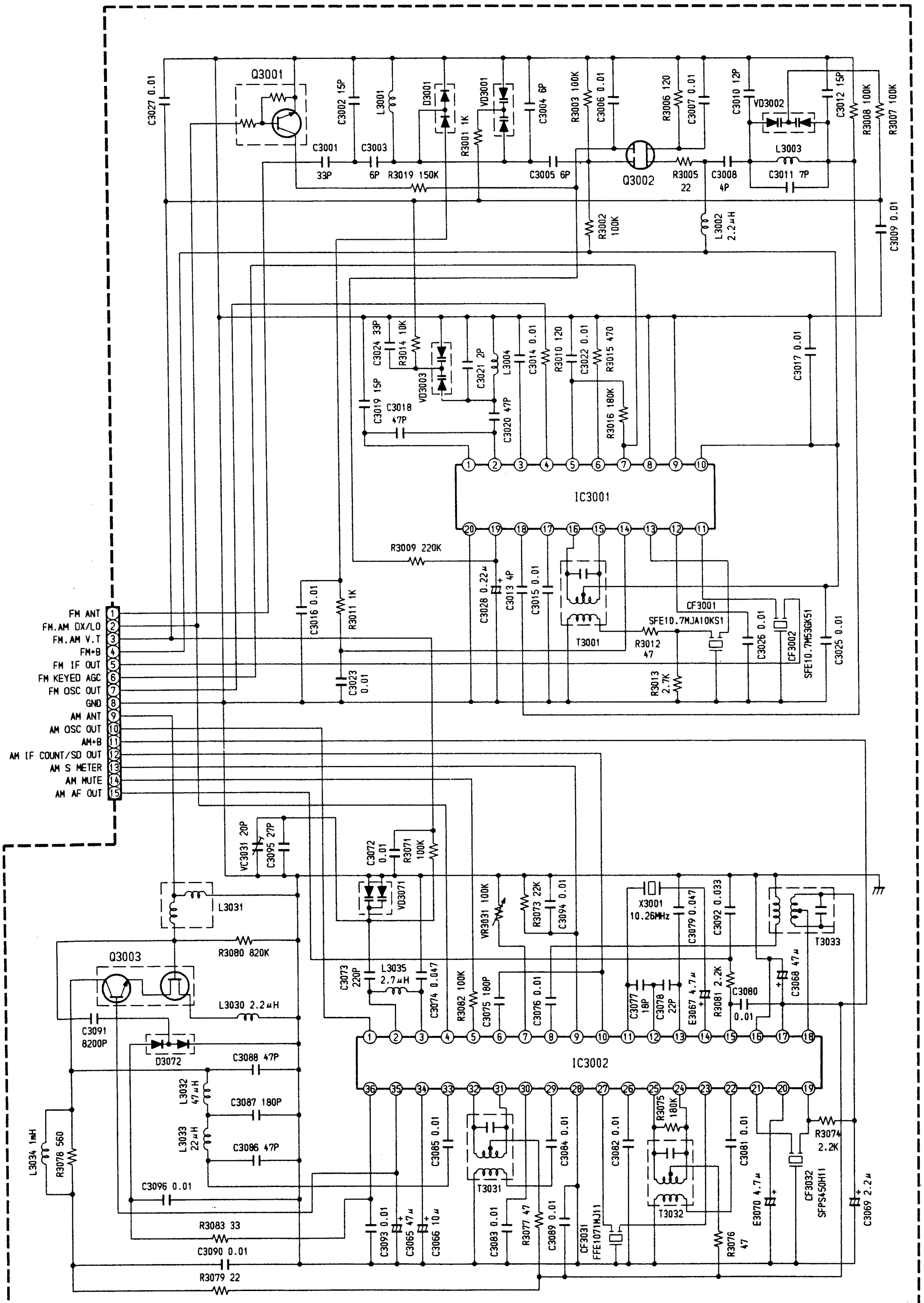
COMMON


Pin No. 37
36
35
3
2
1
LD MO AF T.INFO TP RPT ALL M.I.X. DX SEEK
EON NEWS ST

Block Diagram


ET001 Assy.. Antenna Receptacle
FM/MW/LW TUNER Unit (FE001)
IC004, Q001 L.P.F. SW
IC003 (1/2) L.P.F. 1
IC003 (2/2) L.P.F. 2
IC002 PLL
IC001 IF/NC/MPX
IC010 RDS DECORDER
FM TUNER OUT
AM TUNER OUT
CD
IC203 BUFFER AMP
IC201 AUDIO SELECTOR & ELECTRICAL VOLUME
IC204, Q202 NFP SW
IC205 BUFFER AMP
Q251, 253 MUTE
REAR
ET201-1 RCA Output
ET201-2 REMOTE CONTROL INTERFACE
Q710-713 REMOTE CONTROL INTERFACE CIRCUIT
IC301 POWER IC
FRONT
REAR
ET801 Speaker Output & Power Supply Connector
BATT
ACC
Power Supply CIRCUIT
ACC DET. Q862, 863
IC861 BATT DET.
IC602 E²P-ROM
Q301, 601 MUTE DRIVER
IC661 SYSTEM RESET
Q891 BUZZER DRIVER
BZ891
IC601 MAIN µ-COM
PHOTO SENSORS IC603, PT601, 602
V-CONT
L-CONT
SERVO CONTROL
DS-L MECH SENSORS
MECH CONTROL
IC701, Q702 DC-DC CONVERTER +7V
Q761 L-CONT +5V
Q731 CD AUDIO +B
Q701 L-CONT +B
LED +B
IC721 MOTOR DRIVER
DS-L MECH (DS44L01A)
LED
REMOTE RECEIVER IC402
KEY A/D SW401-417
IC401 LCD DRIVER
LCD401 LCD DISPLAY

Tuner Schematic Diagram


FM ANT
FM.AM DX/LO
FM.AM V.T
FM+B
FM IF OUT
FM KEYED AGC
FM OSC OUT
GND
AM ANT
AM OSC OUT
AM+B
AM IF COUNT/SD OUT
AM S METER
AM MUTE
AM AF OUT
Q3001
Q3002
Q3003
IC3001
IC3002
C3027 0.01
C3002 15P
L3001
D3001
VD3001
R3001 1K
C3004 6P
R3003 100K
C3006 0.01
R3006 120
C3007 0.01
C3010 12P
VD3002
C3012 15P
R3008 100K
R3007 100K
C3001 33P
C3003 6P
R3019 150K
C3005 6P
R3005 22
C3008 4P
L3003
C3011 7P
R3002 100K
L3002 2.2μH
C3009 0.01
C3024 33P
R3014 10K
VD3003
C3021 2P
L3004
C3014 0.01
R3010 120
C3022 0.01
R3015 470
R3016 180K
C3017 0.01
C3019 15P
C3018 47P
C3020 47P
R3009 220K
C3028 0.22μ
C3013 4P
C3015 0.01
T3001
CF3001 SFE10.7MJA10KS1
R3012 47
R3013 2.7K
C3026 0.01
CF3002 SFE10.7MS3GK51
C3025 0.01
C3016 0.01
R3011 1K
C3023 0.01
VC3031 20P
C3095 27P
C3072 0.01
R3071 100K
VD3071
L3031
R3080 820K
L3030 2.2μH
C3091 8200P
D3072
C3088 47P
L3032 47μH
C3087 180P
L3033 22μH
C3086 47P
C3096 0.01
R3083 33
C3090 0.01
R3079 22
L3034 1mH
R3078 560
C3073 220P
L3035 2.7μH
C3074 0.047
R3082 100K
C3075 180P
C3076 0.01
VR3031 100K
R3073 22K
C3094 0.01
X3001 10.26MHz
C3079 0.047
C3092 0.033
C3077 18P
C3078 22P
E3067 4.7μ
R3081 2.2K
C3080 0.01
C3068 47μ
T3033
C3093 0.01
C3065 47μ
C3066 10μ
C3085 0.01
T3031
C3083 0.01
R3077 47
C3089 0.01
C3084 0.01
CF3031 FFE1071MJ11
C3082 0.01
R3075 180K
T3032
R3076 47
C3081 0.01
E3070 4.7μ
CF3032 SFPS450H11
R3074 2.2K
C3069 2.2μ

1

2

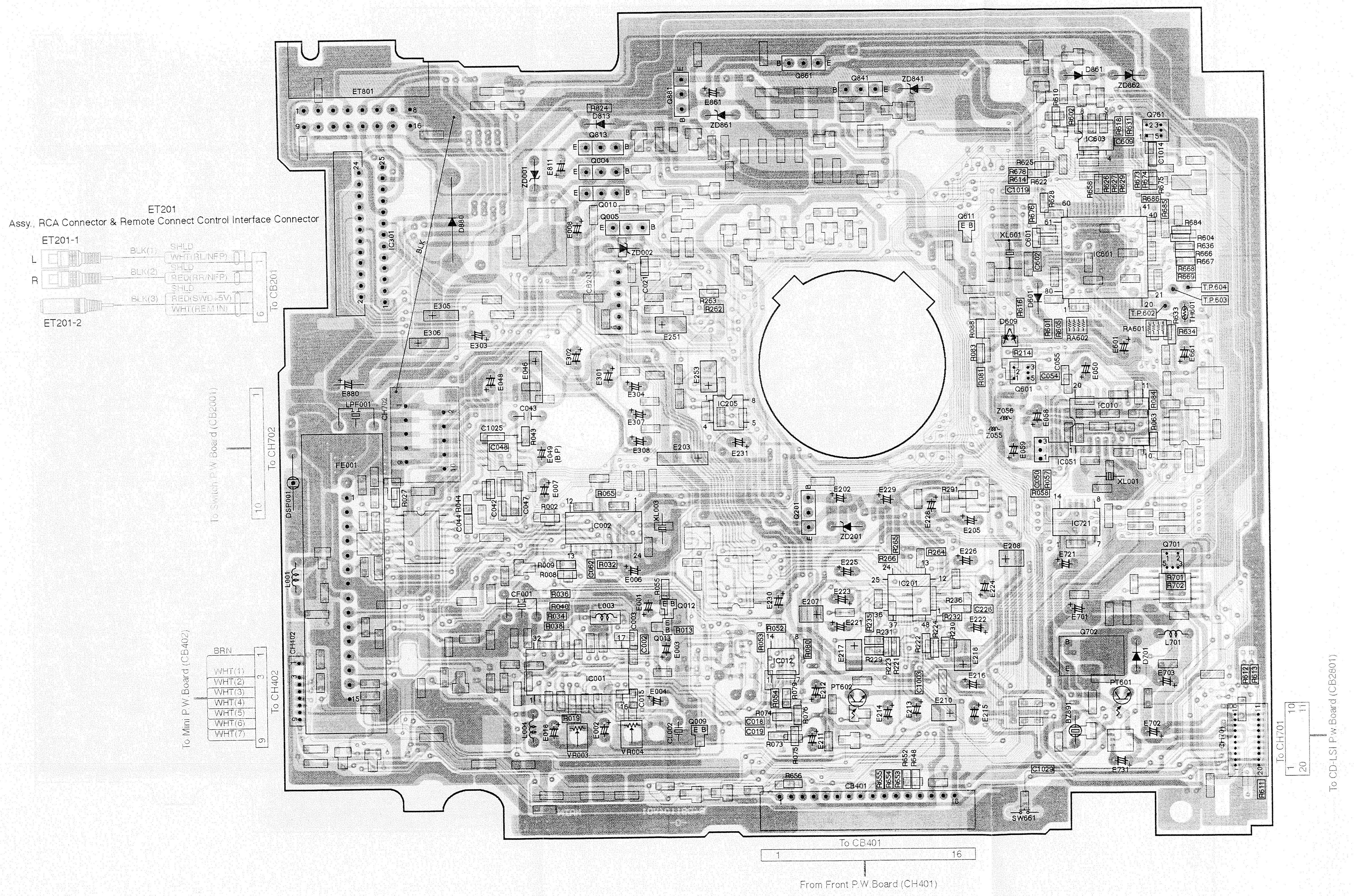
3

4

5

Parts Layout on P.W. Boards and Wiring Diagram (1/4)

Main P.W.Board (Component Side View)

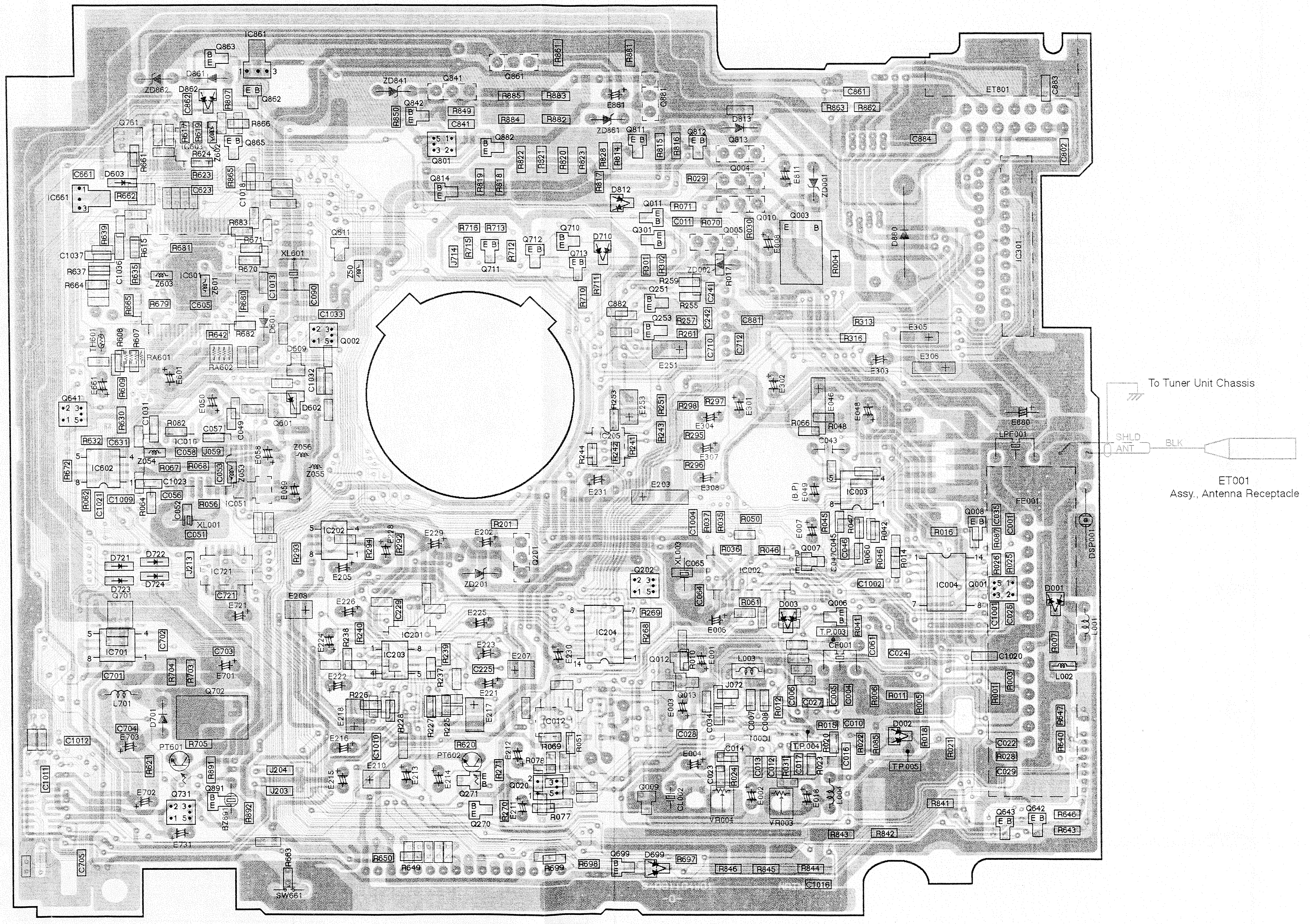

ET201
Assy., RCA Connector & Remote Connect Control Interface Connector
ET201-1
L
R
BLK(1)
SHLD
WHT(RL/NFP)
BLK(2)
SHLD
RED(RR/NFP)
BLK(3)
SHLD
RED(SWD+5V)
WHT(REM IN)
ET201-2
To CB201
To Switch P.W.Board (CB2001)
To CH702
To Mini P.W.Board (CB402)
To CH402
BRN
WHT(1)
WHT(2)
WHT(3)
WHT(4)
WHT(5)
WHT(6)
WHT(7)
ET801
IC301
BLK
D880
E305
E306
E303
E880
LPF001
FE001
DSP001
L001
CH702
CH402
Q861
Q841
ZD841
D861
ZD862
Q881
E861
ZD861
R824
D813
Q813
Q004
Q010
Q005
ZD001
E811
E008
ZD002
IC603
Q761
IC501
XL601
Q611
T.P.604
T.P.603
T.P.602
RA601
RA602
D609
Q601
IC010
IC051
XL001
IC721
Q701
Q702
L701
D701
PT601
PT602
IC201
IC002
IC001
XL003
Q201
ZD201
IC205
E251
IC012
Q012
Q013
Q009
VR003
VR004
L003
CF001
BZ891
SW661
CB401
CH701
To CH701
To CD-LSI P.W.Board (CB2801)
To CB401
From Front P.W.Board (CH401)

Orange Color Pattern : Component Side Pattern
Blue Color Pattern : Foil Side Pattern

A | B | C | D | E | F | G |

Parts Layout on P.W. Boards and Wiring Diagram (2/4)

Main P.W.Board (Foil Side View)


To Tuner Unit Chassis
SHLD
ANT
BLK
ET001
Assy., Antenna Receptacle
IC661
IC601
IC602
IC701
IC721
IC202
IC201
IC203
IC204
IC002
IC003
IC004
IC301
IC861
ET801
LPE001
DSP001
SW661

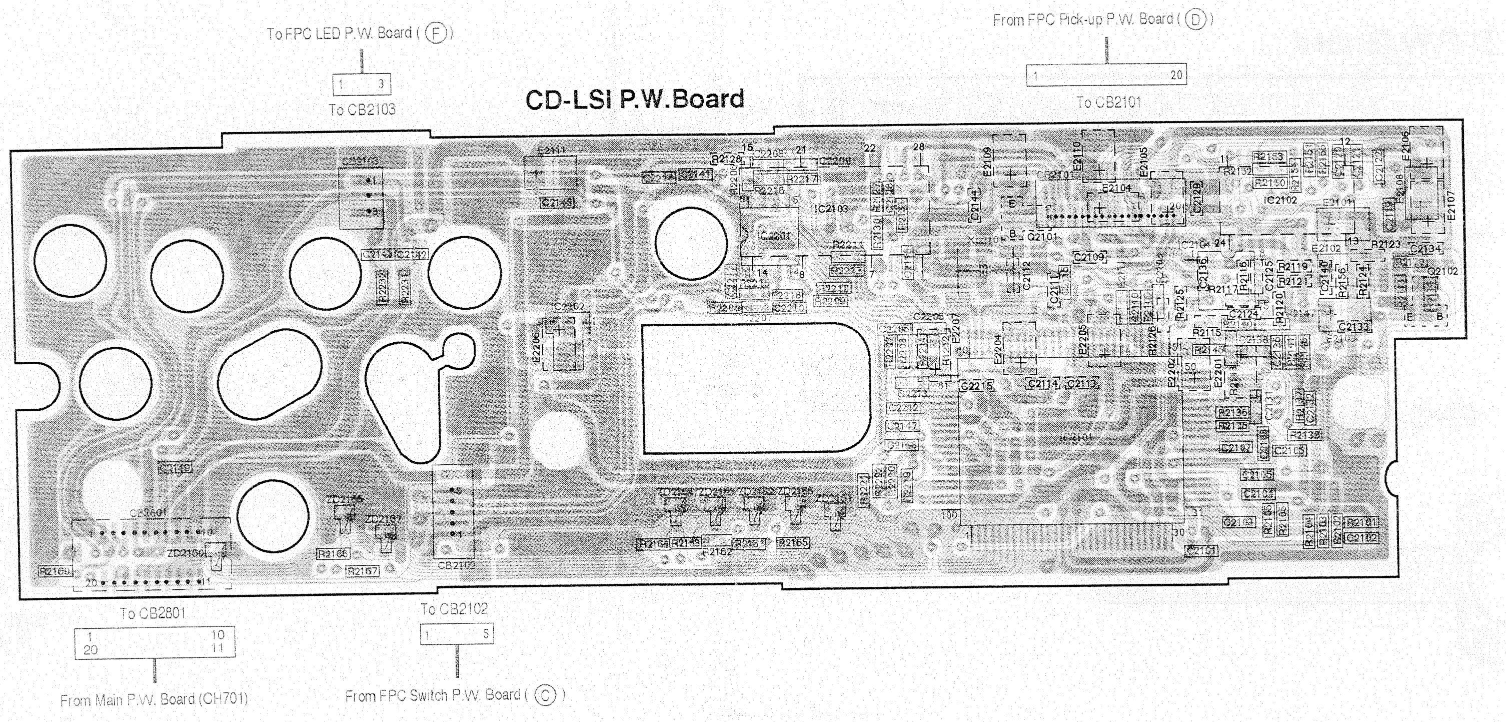
1
2
3
4
5
A
B
C
D
E
F
G

Orange Color Pattern : Component Side Pattern
Blue Color Pattern : Foil Side Pattern

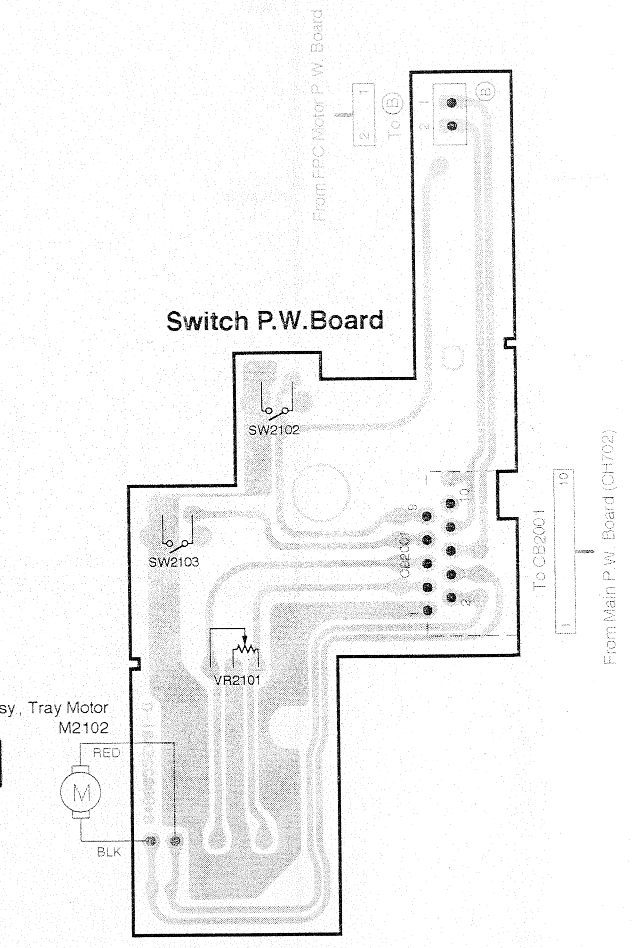
Parts Layout on P.W. Boards and Wiring Diagram (3/4)

All P.W. Boards viewed from soldered side.

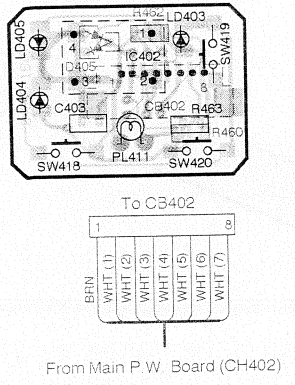
CD-LSI P.W.Board


To FPC LED P.W. Board (Ⓕ)
1 3
To CB2103
From FPC Pick-up P.W. Board (Ⓓ)
1 20
To CB2101
CB2103
IC2101
IC2102
IC2103
IC2201
IC2202
Q2101
Q2102
X2101
CB2801
CB2102
ZD2150
ZD2151
ZD2155
ZD2157
ZD2164
ZD2165
To CB2801
1 10
20 11
From Main P.W. Board (CH701)
To CB2102
1 5
From FPC Switch P.W. Board (Ⓒ)

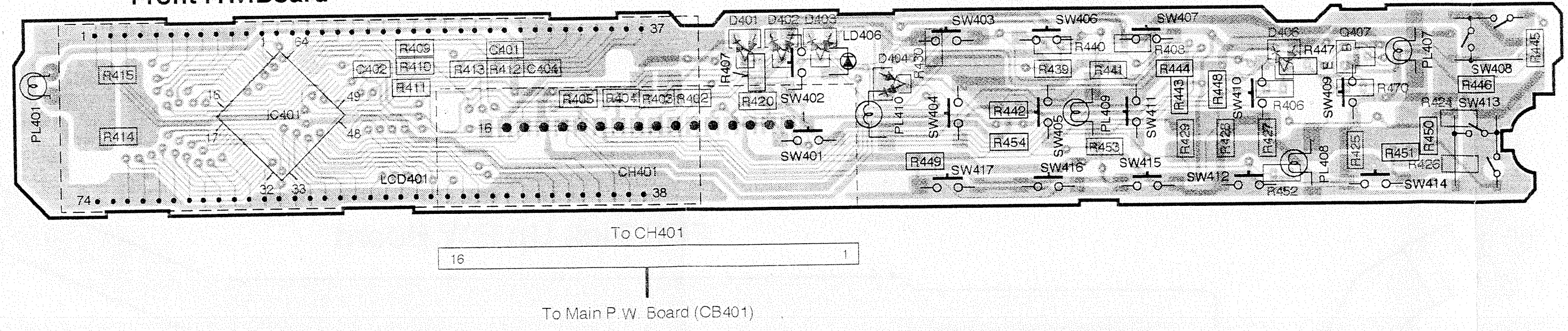
Switch P.W.Board


From FPC Motor P.W. Board
To Ⓑ
1
2
Ⓑ
SW2102
SW2103
CB2001
VR2101
To CB2001
1 10
From Main P.W. Board (CH702)
Tray Motor
M2102
RED
BLK

Mini P.W.Board


LD403
LD404
LD405
D405
IC402
CB402
C403
R460
R462
R463
PL411
SW418
SW419
SW420
To CB402
1 8
BRN
WHT (1)
WHT (2)
WHT (3)
WHT (4)
WHT (5)
WHT (6)
WHT (7)
From Main P.W. Board (CH402)

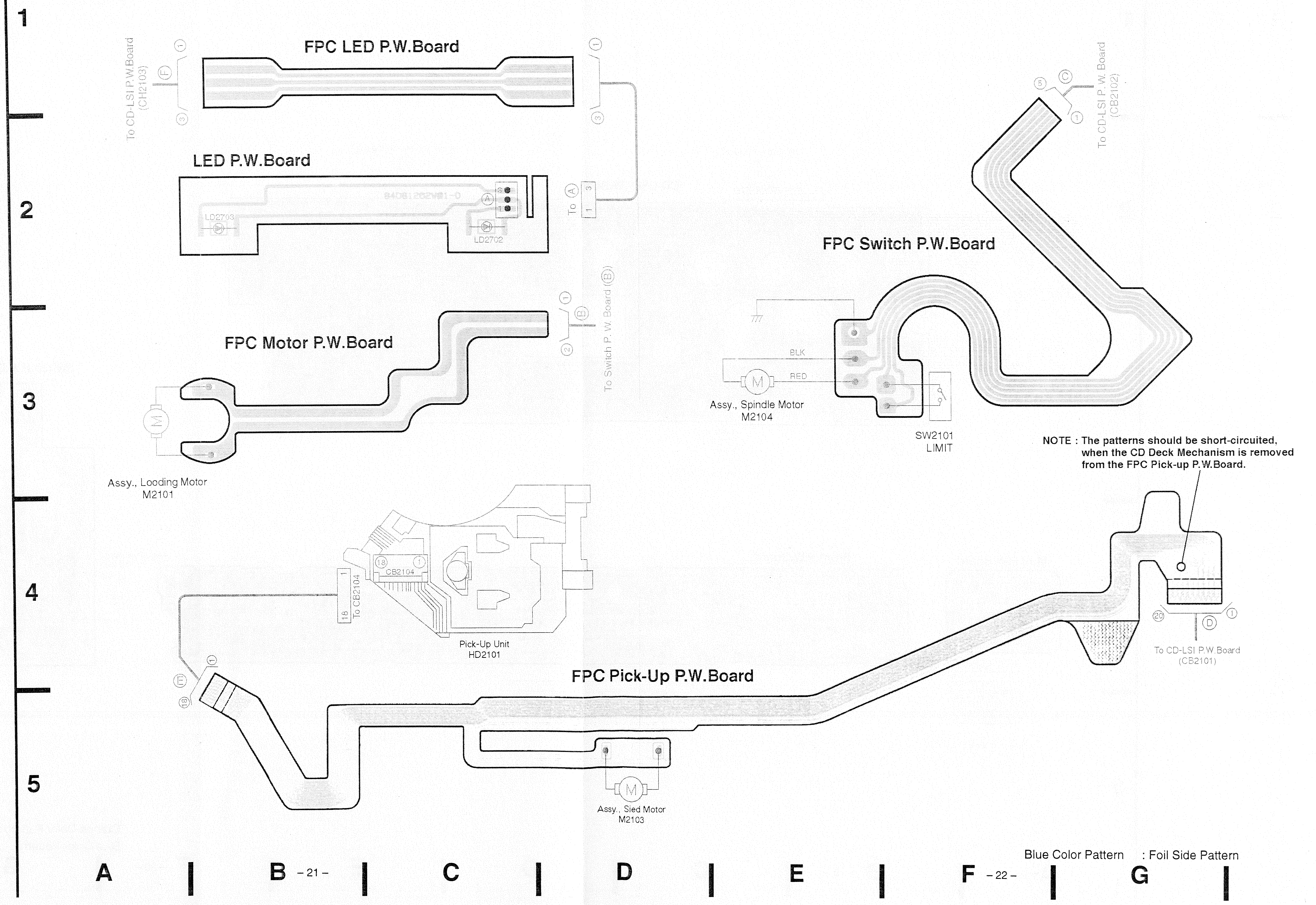
Front P.W.Board


IC401
LCD401
CH401
PL401
PL407
PL408
PL409
PL410
D401
D402
D403
D404
D406
LD406
Q407
SW401
SW402
SW403
SW404
SW406
SW407
SW408
SW409
SW410
SW411
SW412
SW413
SW414
SW415
SW416
SW417
To CH401
16 1
To Main P.W. Board (CB401)

Orange Color Pattern : Component Side Pattern
Blue Color Pattern : Foil Side Pattern

Parts Layout on P.W. Boards and Wiring Diagram (4/4)

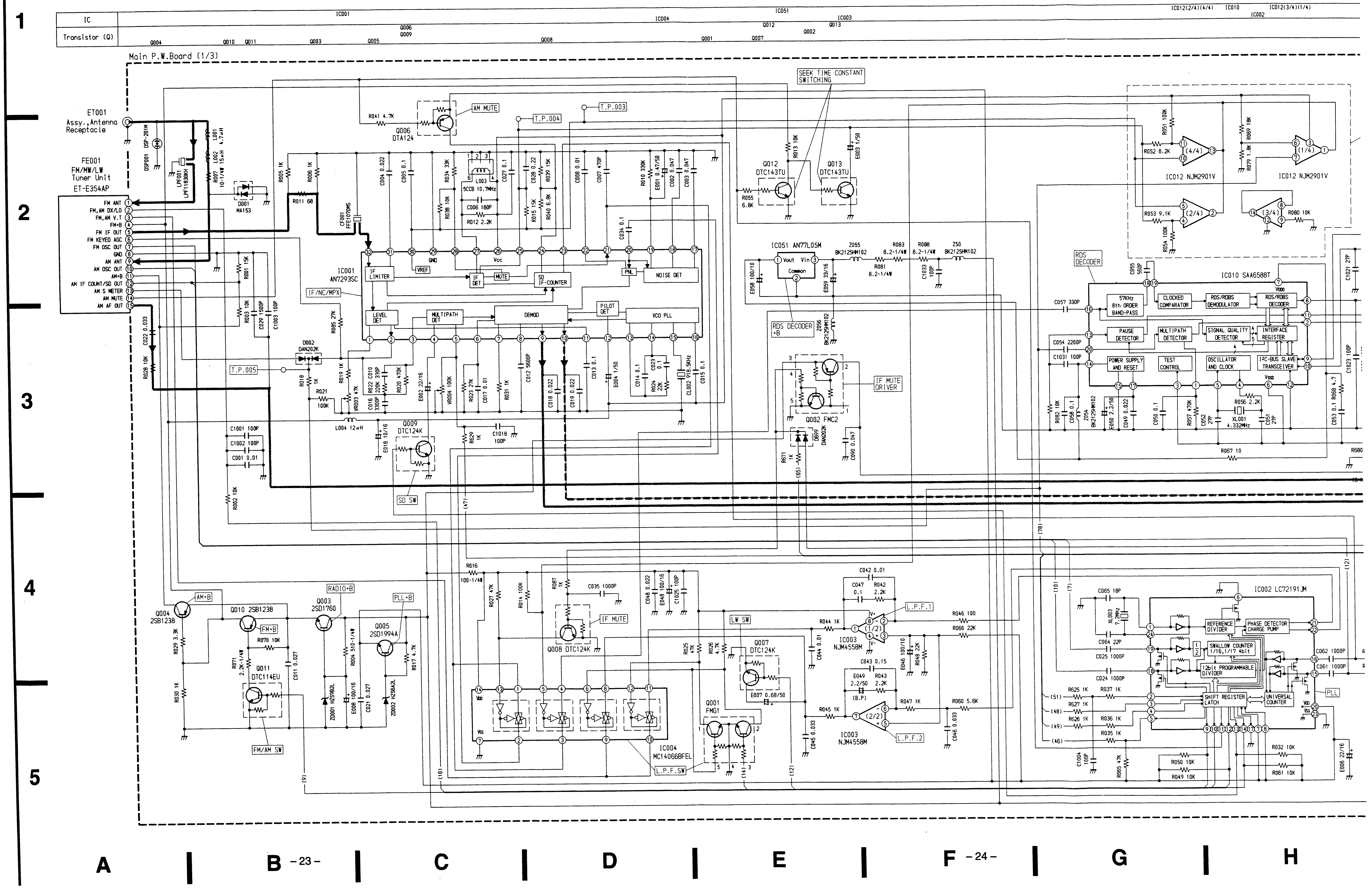
All P.W. Boards viewed from soldered side.


1
2
3
4
5
A
B
C
D
E
F
G
FPC LED P.W.Board
To CD-LSI P.W.Board (CH2103)
F
①
③
LED P.W.Board
LD2703
LD2702
A
To A
1
3
FPC Motor P.W.Board
B
To Switch P. W. Board (B)
②
Assy., Looding Motor
M2101
M
FPC Switch P.W.Board
To CD-LSI P. W. Board (CB2102)
C
⑤
BLK
RED
Assy., Spindle Motor
M2104
SW2101
LIMIT
Pick-Up Unit
HD2101
CB2104
⑱
To CB2104
18
E
FPC Pick-Up P.W.Board
Assy., Sied Motor
M2103
D
⑳
To CD-LSI P.W.Board (CB2101)

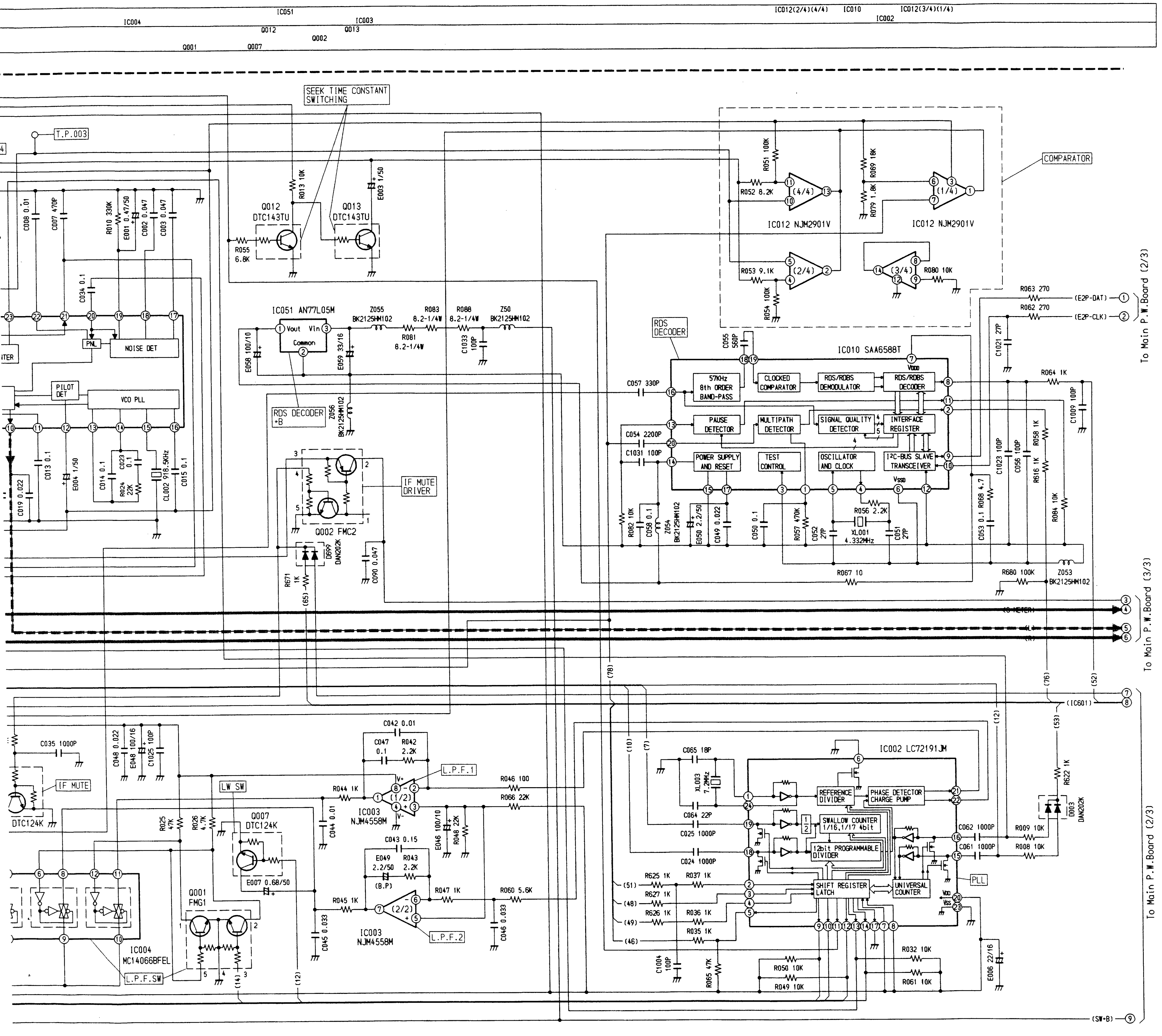
NOTE : The patterns should be short-circuited, when the CD Deck Mechanism is removed from the FPC Pick-up P.W.Board.

Blue Color Pattern : Foil Side Pattern

Schematic Diagram (1/4)



IC
Transistor (Q)
Main P.W.Board (1/3)
ET001 Assy.,Antenna Receptacle
FE001 FM/MW/LW Tuner Unit ET-E354AP
FM ANT
FM,AM DX/LO
FM,AM V.T
FM+B
FM IF OUT
FM KEYED AGC
FM OSC OUT
GND
AM ANT
AM OSC OUT
AM+B
AM IF COUNT/SD OUT
AM S METER
AM MUTE
AM AF OUT
D001 MA153
CF001 FFE1070MS
IC001 AN7293SC
IF LIMITER
IF DET
MUTE
SD IF-COUNTER
PNL
NOISE DET
LEVEL DET
MULTIPATH DET
DEMOD
PILOT DET
VCO PLL
IF/NC/MPX
VREF
GND
Vcc
L003 5CCB 10.7MHz
D002 DAN202K
T.P.003
T.P.004
T.P.005
AM MUTE
Q006 DTA124
SEEK TIME CONSTANT SWITCHING
Q012 DTC143TU
Q013 DTC143TU
IC051 AN77L05M
RDS DECODER +B
IF MUTE DRIVER
Q002 FMC2
D699 DAN202K
Q009 DTC124K
SD SW
RDS DECODER
IC010 SAA6588T
57KHz 8th ORDER BAND-PASS
CLOCKED COMPARATOR
RDS/RDBS DEMODULATOR
RDS/RDBS DECODER
PAUSE DETECTOR
MULTIPATH DETECTOR
SIGNAL QUALITY DETECTOR
INTERFACE REGISTER
POWER SUPPLY AND RESET
TEST CONTROL
OSCILLATOR AND CLOCK
I2C-BUS SLAVE TRANSCEIVER
XL001 4.332MHz
IC012 NJM2901V
Q004 2SB1238
Q010 2SB1238
Q003 2SD1760
Q005 2SD1994A
Q011 DTC114EU
AM+B
FM+B
RADIO+B
PLL+B
FM/AM SW
Q008 DTC124K
IF MUTE
IC004 MC14066BFEL
L.P.F.SW
LW SW
Q007 DTC124K
Q001 FMG1
IC003 NJM4558M
L.P.F.1
L.P.F.2
IC002 LC72191JM
XL003 7.2MHz
REFERENCE DIVIDER
PHASE DETECTOR CHARGE PUMP
SWALLOW COUNTER 1/16,1/17 4bit
12bit PROGRAMMABLE DIVIDER
SHIFT REGISTER LATCH
UNIVERSAL COUNTER
PLL
1
2
3
4
5
A
B
C
D
E
F
G
H


IC051
IC004
IC003
Q012
Q013
Q002
Q001
Q007
IC012(2/4)(4/4)
IC010
IC012(3/4)(1/4)
IC002
SEEK TIME CONSTANT SWITCHING
T.P.003
COMPARATOR
Q012 DTC143TU
Q013 DTC143TU
IC012 NJM2901V
IC051 AN77L05M
RDS DECODER
IC010 SAA6588T
57KHz 8th ORDER BAND-PASS
CLOCKED COMPARATOR
RDS/RDBS DEMODULATOR
RDS/RDBS DECODER
PAUSE DETECTOR
MULTIPATH DETECTOR
SIGNAL QUALITY DETECTOR
INTERFACE REGISTER
POWER SUPPLY AND RESET
TEST CONTROL
OSCILLATOR AND CLOCK
I²C-BUS SLAVE TRANSCEIVER
RDS DECODER +B
IF MUTE DRIVER
Q002 FMC2
NOISE DET
PILOT DET
VCO PLL
(E2P-DAT)
(E2P-CLK)
To Main P.W.Board (2/3)
To Main P.W.Board (3/3)
(S-METER)
(IC601)
IF MUTE
DTC124K
LW SW
Q007 DTC124K
IC003 NJM4558M
L.P.F.1
L.P.F.2
Q001 FMG1
IC004 MC14066BFEL
L.P.F.SW
IC002 LC72191JM
REFERENCE DIVIDER
PHASE DETECTOR CHARGE PUMP
SWALLOW COUNTER 1/16,1/17 4bit
12bit PROGRAMMABLE DIVIDER
SHIFT REGISTER LATCH
UNIVERSAL COUNTER
PLL
(SW-B)

IC001

1	2.9V / 0V	FM / AM	17	3.52V / 0.48V	FM / AM
2	5.12V / 0V	FM / AM	18	4.1V / 0.87V	FM / AM
3	1.79V / 0V	FM / AM	19	1.42V / 0V / 1.62V	FM / AM / (FM) SEEK
4	0.78V		20	2.44V / 0.3V	FM / AM
5	1.43V / 0.3V	FM / AM	21	3.42V / 0V	FM / AM
6	1.55V / 0V	FM / AM	22	3.04V / 1.3V	FM / AM
7	0V		23	4.84V / 0V	FM / AM
8	2.91V / 0V	FM / AM	24	4.89V / 2.9V	POWER ON / SEEK
9	3.18V / 0V	FM / AM	25	4.24V / 0.78V	FM / AM
10	3.16V / 0V	FM / AM	26	8.34V / 1.11V	FM / AM
11	0.23V / 3.56V	POWER ON / SEEK	27	8.33V / 1.11V	FM / AM
12	7V / 0V	FM / AM	28	3.24V / 0V	FM / AM
13	2.6V / 0V	FM / AM	29	0V	
14	2.6V / 0.3V	FM / AM	30	4.21V / 0.87V	FM / AM
15	PS		31	3.07V / 0.65V	FM / AM
16	6.99V / 0.11V	FM / AM	32	PS	

IC002

1	PS	
2~4	0V / PS	POWER ON / SEEK
5	4.9V / PS	POWER ON / SEEK
6	0V	
7, 8	4.93V	
9	2.71V / 0.14V	FM / AM
10	4.82V / 0V	SEEK LOCAL / DX
11	0.06V / 4.81V	POWER ON / SEEK
12	0.05V / 3.54V	MW / LW
13	3.55V	
14	3.48V / 0.05V	RDS SW ON / OFF
15~17	0V	
18	0V / PS	FM / AM
19	2.47V / 0V	FM / AM
20	4.9V	
21	1.89V / 2.44V	POWER ON / SEEK
22	2.43V	
23	0V	
24	PS	

IC003

1	13.3V
2	2.46V
3	2.45V
4	0V
5	2.45V
6	2.45V
7	4.62V
8	13.7V

IC004

1~4	PS	
5	13.68V / PS	POWER ON /RDS SW SELECT
6	11.29V	
7	0V	
8~10	4.62V	
11	13.32V	
12	13.5V / 0V	RDS SW ON / OFF
13	13.65V	
14	13.72V	

IC010

1~3	0V	13	2.43V
4, 5	PS	14	5.01V
6	0V	15	0V
7	4.98V	16	2.49V
8	4.97V	17	2.5V
9, 10	PS	18	2.51V
11	4.93V	19	2.48V
12	0V	20	2.5V

IC012

1, 2	13.58V	9	0V
3	8.32V	10	4.21V
4	3.79V	11	4.62V
5	4.21V	12	0V
6	0.74V	13	13.45V
7	4.61V	14	PS
8	PS		

IC051

1	5.01V
2	0V
3	13.7V

	E	C	B	MODE
Q003	8.5V	14.19V	9.07V	
Q004	8.47V / 8.49V	0V / 8.41V	8.37V / 7.8V	FM / AM
Q005	4.91V	14.17V	5.5V	
Q006	4.92V / 4.92V	4.89V / 2.89V	0.86V / 4.82V	POWER ON / SEEK
Q007	0V / 0V	0.95V / 0V	0V / 3.53V	FM / LW
Q008	0V	13.31V	0V	
Q009	0V	0V	3.55V	
Q010	8.49V / 8.48V	8.42V / 1.12V	7.8V / 8.45V	FM / AM
Q011	0V / 0V	0V / 8.4V	2.72V / 0.14V	FM / AM
Q012	0V / 0V	3.18V / 0V	0V / 2.38V	POWER ON / SEEK
Q013	0V / 0V	0V / 0V	3.18V / 0V	POWER ON / SEEK

	1	2	3	4	5	MODE
Q001	13.3V / 0V	0V / 11.16V	3.48V / 0V	0V / 0V	0V / 11.08V	RDS SW ON / OFF
Q002	NC	0.19V	14.14V	0.26V	0V	

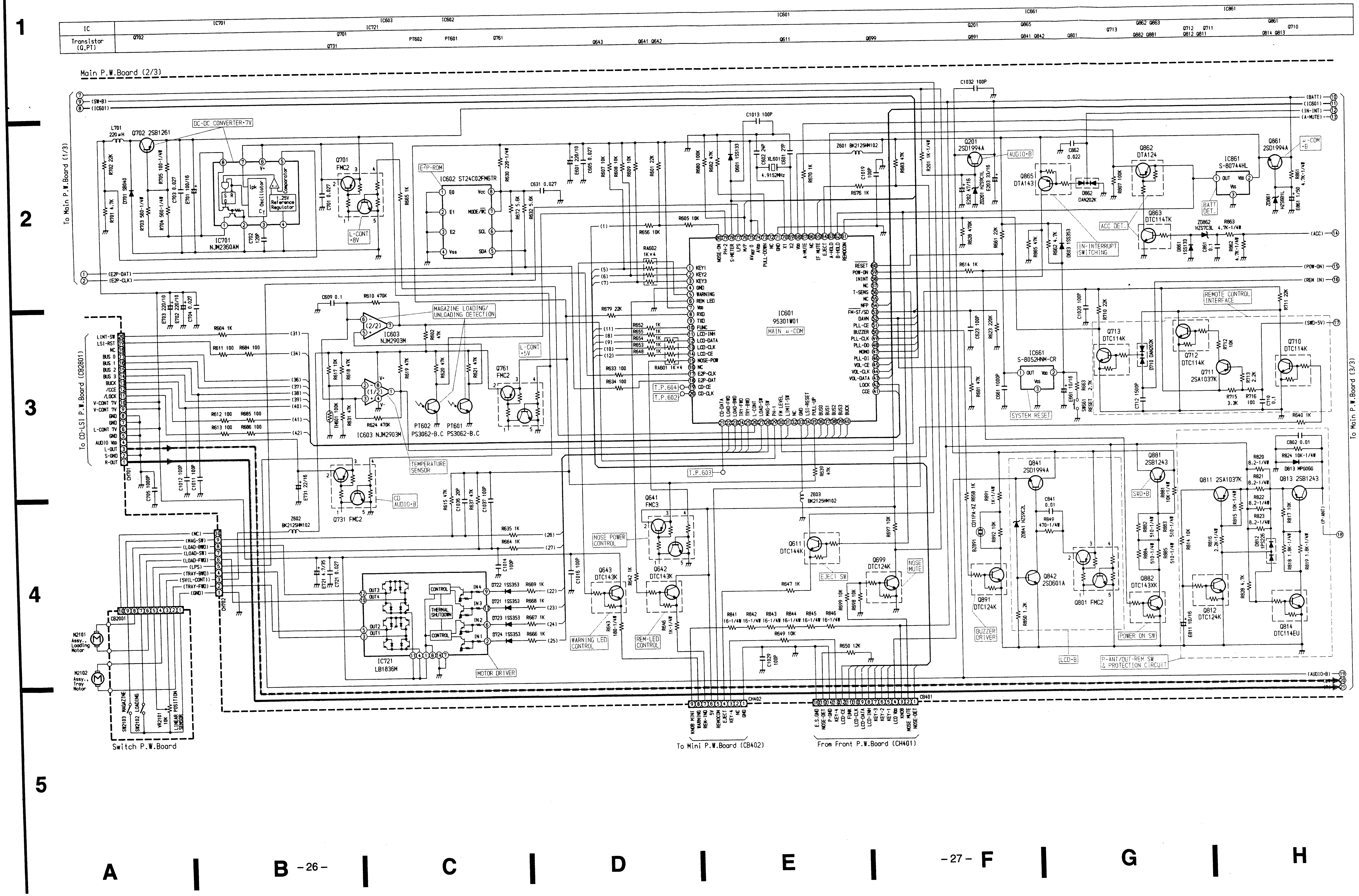
[Measuring Conditions]

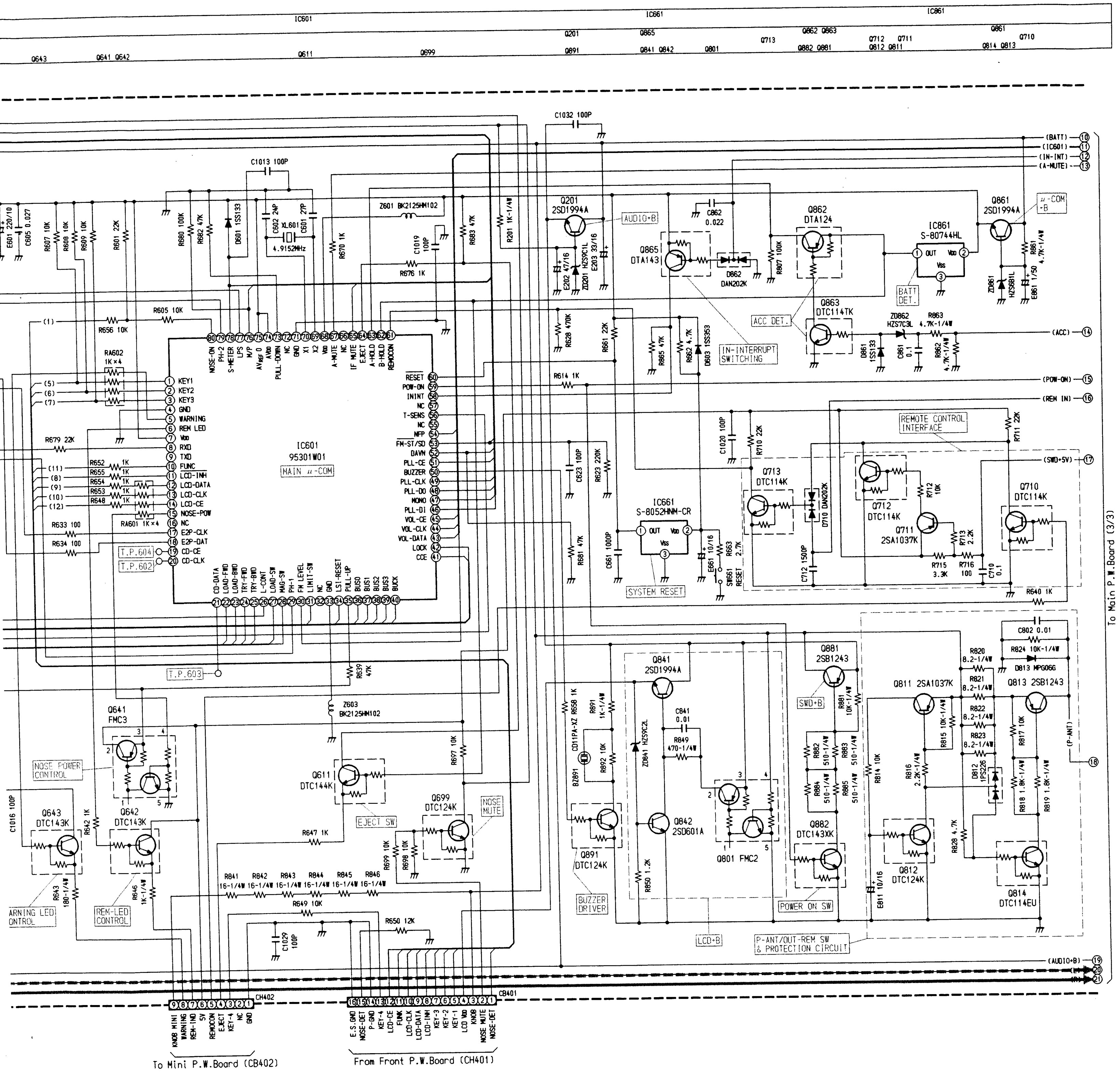
- Power Supply Voltage : DC14.4V
- Measuring Meter : Digital Multi Voltmeter
- Measuring Point Reference : Between Ground
- Measuring Conditions : FM .... 98.1MHz, No MOD.
  MW 999kHz
  LW 216kHz

NOTE:

1. All resistance values are in ohms. K = 1,000
2. All capacitance values are in microfarads. $P = \frac{1}{1,000,000}$

Schematic Diagram (2/4)


1
2
3
4
5
A
B
C
D
E
F
G
H
IC
Transistor (Q,PT)
IC701
IC603
IC721
IC602
IC601
IC661
IC861
Q702
Q701
Q731
PT602
PT601
Q761
Q643
Q641
Q642
Q611
Q699
Q201
Q891
Q865
Q841
Q842
Q801
Q713
Q862
Q863
Q882
Q881
Q712
Q711
Q812
Q811
Q861
Q814
Q813
Q710
Main P.W.Board (2/3)
To Main P.W.Board (1/3)
To Main P.W.Board (3/3)
To CD-LSI P.W.Board (CB2801)
DC-DC CONVERTER・7V
Q702 2SB1261
L701 220μH
IC701 NJM2360AM
1.25V Reference Regulator
Comparator
C⊤ Oscillator
Q701 FMC2
L-CONT +8V
E²P-ROM
IC602 ST24C02FM6TR
E0
E1
E2
Vss
Vcc
MODE/WC
SCL
SDA
C631 0.027
MAGAZINE LOADING/UNLOADING DETECTION
IC603 NJM2903M
PT602 PT601 PS3062-B.C PS3062-B.C
TEMPERATURE SENSOR
Q761 FMC2
L-CONT +5V
Q731 FMC2
CD AUDIO+B
IC721 LB1836M
CONTROL
THERMAL SHUTDOWN
MOTOR DRIVER
IC601 95301W01
MAIN μ-COM
KEY1
KEY2
KEY3
GND
WARNING
REM LED
Vdd
RXD
TXD
FUNC
LCD-INH
LCD-DATA
LCD-CLK
LCD-CE
NOSE-POW
NC
E2P-CLK
E2P-DAT
CD-CE
CD-CLK
RESET
POW-ON
ININT
T-SENS
NFP
FM-ST/SD
DAWN
BUZZER
PLL-CE
PLL-CLK
PLL-DO
PLL-DI
MONO
VOL-CE
VOL-CLK
VOL-DATA
LOCK
CCE
T.P.604
T.P.602
T.P.603
Z601 BK2125HM102
Z602 BK2125HM102
Z603 BK2125HM102
X601 4.9152MHz
C1013 100P
C1032 100P
Q201 2SD1994A
AUDIO+B
Q865 DTA143
D862 DA202K
Q862 DTA124
Q863 DTC114TK
ACC DET.
IN-INTERRUPT SWITCHING
IC861 S-80744HL
BATT DET.
Q861 2SD1994A
μ-COM +B
REMOTE CONTROL INTERFACE
IC661 S-8052HNM-CR
SYSTEM RESET
Q713 DTC114K
Q712 DTC114K
Q711 2SA1037K
Q710 DTC114K
NOSE POWER CONTROL
Q641 FMC3
Q643 DTC143K
Q642 DTC143K
WARNING LED CONTROL
REM-LED CONTROL
Q611 DTC144K
EJECT SW
Q699 DTC124K
NOSE MUTE
Q841 2SD1994A
Q842 2SD601A
Q801 FMC2
Q891 DTC124K
BUZZER DRIVER
LCD+B
Q881 2SB1243
SWD+B
Q882 DTC143XK
POWER ON SW
Q811 2SA1037K
Q813 2SB1243
D813 MPG06G
Q812 DTC124K
Q814 DTC114EU
P-ANT/OUT-REM SW & PROTECTION CIRCUIT
(BATT)
(IC601)
(IN-INT)
(A-MUTE)
(ACC)
(POW-ON)
(REM IN)
(SWD+5V)
(P-ANT)
(AUDIO+B)
(SW+B)
(E2P-DAT)
(E2P-CLK)
LIMIT-SW
LSI-RST
BUS 0
BUS 1
BUS 2
BUS 3
BUCK
/CCE
/LOCK
V-CONT 7V
L-CONT 7V
AUDIO
L-OUT
S-GND
R-OUT
CH701
CH702
CB2001
M2101 Assy., Loading Motor
M2102 Assy., Tray Motor
SW2103 MAGAZINE
SW2102 LOADING
VR2101 10K
LINEAR POSITION SENSOR
Switch P.W.Board
(NC)
(MAG-SW)
(LOAD-BWD)
(LOAD-SW)
(LOAD-FWD)
(LPS)
(TRAY-BWD)
(SVL-CONT)
(TRAY-FWD)
(GND)
CH402
To Mini P.W.Board (CB402)
CB401
From Front P.W.Board (CH401)


IC601
95301W01
MAIN μ-COM
IC661
S-8052HNM-CR
SYSTEM RESET
IC861
S-80744HL
Q201 2SD1994A
Q861 2SD1994A
Q862 DTA124
Q863 DTC114TK
Q865 DTA143
Q713 DTC114K
Q712 DTC114K
Q711 2SA1037K
Q710 DTC114K
Q611 DTC144K
Q699 DTC124K
Q641 FMC3
Q642 DTC143K
Q643 DTC143K
Q841 2SD1994A
Q842 2SD601A
Q801 FMC2
Q891 DTC124K
Q881 2SB1243
Q882 DTC143XK
Q811 2SA1037K
Q813 2SB1243
Q812 DTC124K
Q814 DTC114EU
AUDIO+B
μ-COM +B
ACC DET.
BATT DET.
IN-INTERRUPT SWITCHING
REMOTE CONTROL INTERFACE
NOSE POWER CONTROL
EJECT SW
NOSE MUTE
WARNING LED CONTROL
REM-LED CONTROL
BUZZER DRIVER
LCD+B
POWER ON SW
SWD+B
P-ANT/OUT-REM SW & PROTECTION CIRCUIT
T.P.603
T.P.604
T.P.602
XL601 4.9152MHz
(BATT)
(IC601)
(IN-INT)
(A-MUTE)
(ACC)
(POW-ON)
(REM IN)
(SWD+5V)
(P-ANT)
(AUDIO+B)
To Main P.W.Board (3/3)
CH402
CB401
To Mini P.W.Board (CB402)
From Front P.W.Board (CH401)

IC601

1~3	5.12V		48, 49	0V/PS	POWER ON/SEEK
4	0V		50	PS/0V	BUZZER ON/OFF
5	0V/PS	POWER ON/EJECT SW ON	51	0V/PS	POWER ON/SEEK
6	5.12V/PS	POWER ON/LED TURN ON AND OFF	52	4.87V	
7	5.13V		53	0V/4.24V	FM ST/MONO
8	5.12V		54	5.11V/0V	NFP ON/OFF
9	5.13V		55	NC	
10	5.11V/0V	FUNC SW ON/OFF	56	0V	
11	5.13V		57	NC	
12~14	PS		58	5.12V/0V	IN-INT ON/OFF
15	5.1V		59	5.08V	
16	NC		60	5.1V	
17, 18	PS		61	4.83V/PS	REMOTE INTERFACE ON/OFF
19~21	0V/PS	CD PLAY/CD LOAD, EJECT	62	4.92V	
22~25	0V/5.11V	CD PLAY/CD LOAD, EJECT	63	4.91V	
26	0V/5.11V	POWER ON/CD PLAY	64	0.22V/5.09V	EJECT SW ON/OFF
27	0V/5.08V	CD PLAY/CD LOAD, EJECT	65	0V	
28	0V/5.08V	DISC MAGAZINE IN/OUT	66	NC	
29	0V/4.82V	POWER ON/CD PLAY	67	5.11V/0V	MUTE ON/OFF
30	0V/5.1V	FM LEVEL HIGH/LOW	68	5.13V	
31	0V/5.02V	POWER ON/ACTION LED ON	69, 70	PS	
32	NC		71	0V	
33	0V		72	NC	
34	0V/5.1V	POWER ON/CD PLAY	73	0V	
35	5.09V		74, 75	5.13V	
36~42	0V/PS	POWER ON/CD PLAY	76, 77	0V	
43~45	PS		78	4.51V/3.83V	FM/AM
46	4.9V/PS	POWER ON/SEEK	79	0V/5.06V	POWER ON/OFF
47	1.43V/0.29V	FM/AM	80	2.56V	

IC602

1~4	0V
5, 6	PS
7, 8	5.13V

IC603

1	0V	
2	0V/4.48V	POWER ON/CD PLAY
3	0V/2.53V	POWER ON/CD PLAY
4	0V	
5	0V/5.02V	POWER ON/CD PLAY
6	0V/2.52V	POWER ON/CD PLAY
7	0V/4.81V	POWER ON/CD PLAY
8	0V/5.09V	POWER ON/CD PLAY

IC661

1, 2	5.12V
3	0V

IC701

1	14.27V/PS	POWER ON/CD PLAY
2	0V	
3	0V/PS	POWER ON/CD PLAY
4	0V	
5	0V/1.25V	POWER ON/CD PLAY
6, 7	0V/14.2V	POWER ON/CD PLAY
8	14.27V/PS	POWER ON/CD PLAY

IC861

1	4.92V
2	5.13V
3	0V

IC721

1	0V/7.06V	POWER ON/CD PLAY	8	NC	
2	0V/4.53V	CD PLAY/CD LOAD, EJECT	9	0V/4.52V	CD PLAY/CD LOAD, EJECT
3	0.24V/7.01V	CD PLAY/CD LOAD, EJECT	10	0.37V/7.01V	CD PLAY/CD LOAD, EJECT
4	0V/7.07V	POWER ON/CD PLAY	11	0V/7.07V	POWER ON/CD PLAY
5	0.26V/7V	CD PLAY/CD LOAD, EJECT	12	0.3V/7.01V	CD PLAY/CD LOAD, EJECT
6	0V/4.53V	CD PLAY/CD LOAD, EJECT	13	0V/4.52V	CD PLAY/CD LOAD, EJECT
7	0V		14	0V	

	E	C	B	MODE
Q201	8.66V	14.25V	9.28V	
Q611	0.21V/4.87V	0.21V/5.09V	4.92V/4.92V	EJECT SW ON/ OFF (POWER ON)
Q642	3.58V/PS	5.06V/5.06V	4.96V/PS	POWER ON/LED TURN ON AND OFF
Q643	0V/PS	0V/PS	0V/PS	POWER ON/EJECT SW ON
Q699	0V	0V	2.66V	
Q702	14.25V/14.21V	0V/PS	14.26V/PS	POWER ON/CD PLAY
Q710	0V/0V	0V/PS	1.45V/PS	REMOTE INTERFACE ON/OFF
Q711	5.07V	0V	5.07V	
Q712	0V/0V	0V/PS	0V/0V	REMOTE INTERFACE ON/OFF
Q713	0V/0V	4.83V/PS	0V/PS	REMOTE INTERFACE ON/OFF
Q811	14V/14.16V	0.56V/14.14V	13.55V/13.42V	ANT, REM/500mA OVER
Q812	0V/0V	13.46V/0V	0.67V/9.65V	ANT, REM/500mA OVER
Q813	13.06V/14.16V	12.97V/0V	12.34V/14.12V	ANT, REM/500mA OVER
Q814	0V/0V	0V/14.07V	9.53V/0.67V	ANT, REM/500mA OVER
Q841	9.99V	14.25V	10.61V	
Q842	0V	10.61V	0.57V	
Q861	5.13V	14.25V	5.72V	
Q862	4.91V/5.14V	4.9V/0.23V	0V/5.09V	POWER ON/ONLY BATT
Q863	0V/0V	0V/5.12V	4.69V/0V	POWER ON/ONLY BATT
Q865	5.12V/5.12V	0V/5.1V	5.11V/3.32V	IN-INT ON/OFF
Q881	14.23V	14.16V	13.5V	
Q882	0V	0.08V	4.28V	
Q891	0V/0V	PS/14.24V	PS/0V	BUZZER ON/OFF

	1	2	3	4	5	MODE
Q641	NC	5.06V	5.12V	4.69V	0V	
Q701	NC	0V/14.13V	14.22V/14.16V	0V/4.89V	0V/0V	POWER ON/CD PLAY
Q731	NC	0.55V/8.59V	8.67V/8.67V	0V/14.2V	0V/0V	POWER ON/CD PLAY
Q761	NC	0V/5.08V	5.12V/5.12V	0V/14.17V	0V/0V	POWER ON/CD PLAY
Q801	NC	14.18V	14.25V	14.18V	0V	

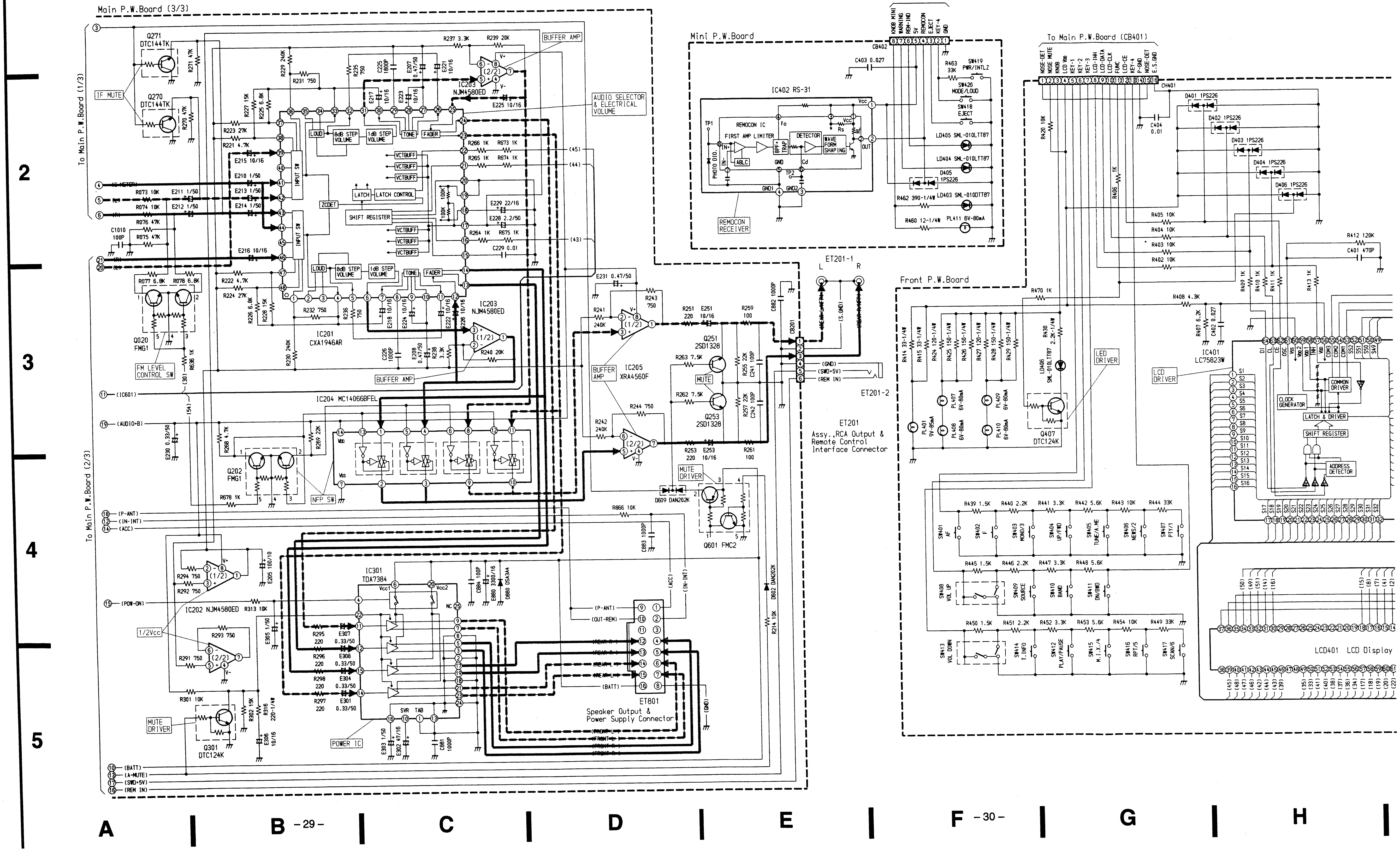
[Measuring Conditions]

• Power Supply Voltage	:	DC14.4V
• Measuring Meter	:	Digital Multi Voltmeter
• Measuring Point Reference	:	Between Ground
• Measuring Conditions	:	FM .... 98.1MHz, No MOD.
		MW 999kHz
		LW 216kHz

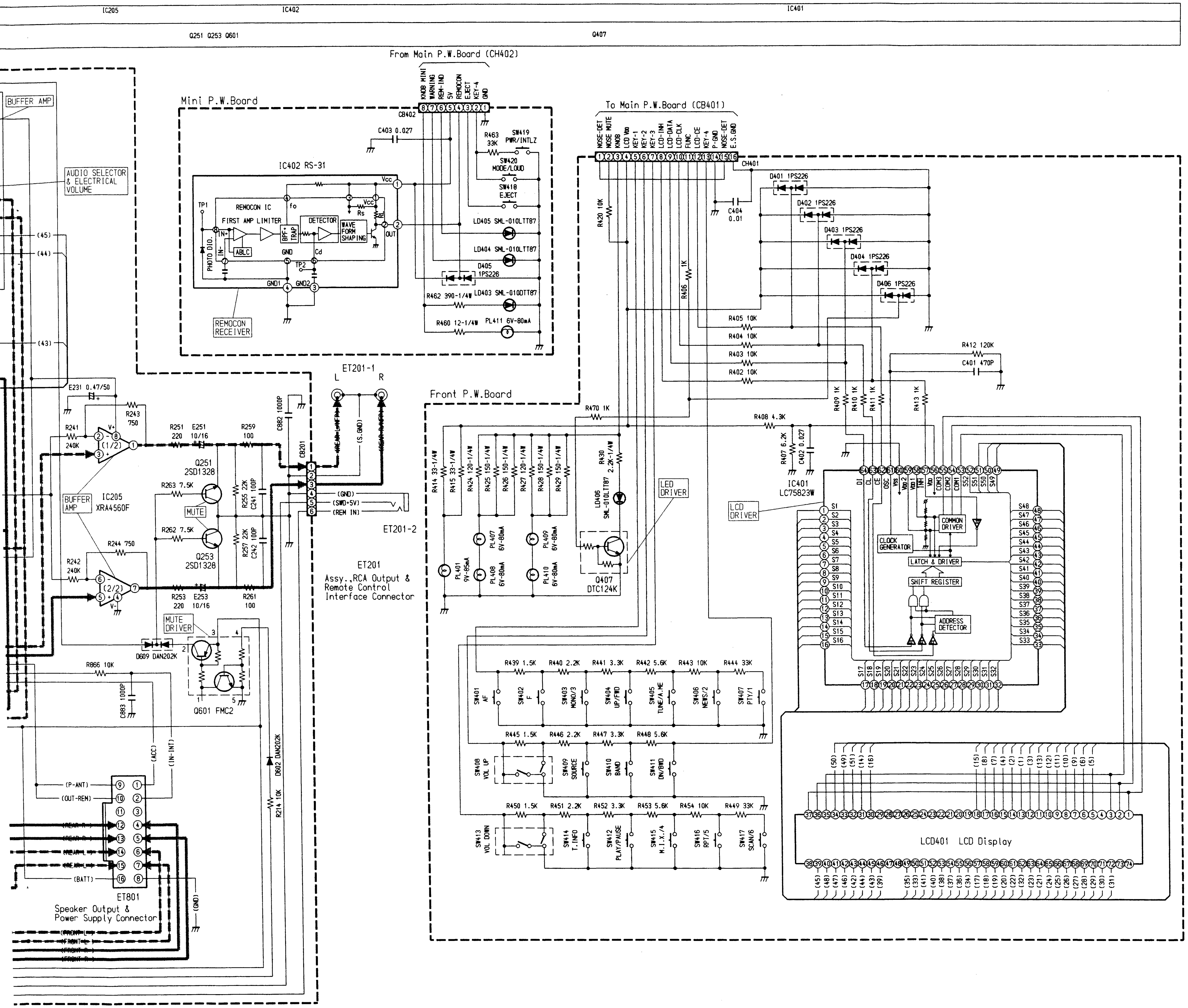
NOTE:
1. All resistance values are in ohms. K = 1,000
2. All capacitance values are in microfarads. $P = \frac{1}{1,000,000}$

Schematic Diagram (3/4)

IC	IC202	IC201 IC204	IC301	IC203	IC205	IC402	IC401
Transistor (Q)	Q020 Q271 Q270 Q301	Q202			Q251 Q253 Q601		Q407



Main P.W.Board (3/3)
To Main P.W.Board (1/3)
To Main P.W.Board (2/3)
Q271 DTC144TK
Q270 DTC144TK
IF MUTE
R271 47K
R270 47K
R223 27K
R221 4.7K
R227 15K
R225 6.8K
R229 240K
R231 750
E215 10/16
E210 1/50
E211 1/50
E212 1/50
E213 1/50
E214 1/50
E216 10/16
R073 10K
R074 10K
R076 47K
R075 47K
C1010 100P
R077 6.8K
R078 6.8K
Q020 FMG1
FM LEVEL CONTROL SW
R636 1K
R222 4.7K
R224 27K
R226 6.8K
R228 15K
INPUT SW
ZCDET
SHIFT REGISTER
LATCH
LATCH CONTROL
LOUD
8dB STEP VOLUME
1dB STEP VOLUME
TONE
FADER
VCTBUFF
IC201 CXA1946AR
R232 750
R236 750
R230 240K
C226 1000P
E208 0.47/50
R238 3.3K
E218 10/16
E224 10/16
E222 10/16
E226 10/16
R237 3.3K
R239 20K
R235 750
C225 1000P
E207 0.47/50
E217 10/16
E223 10/16
E221 10/16
E225 10/16
IC203 NJM4580ED
BUFFER AMP
AUDIO SELECTOR & ELECTRICAL VOLUME
R266 1K
R265 1K
R673 1K
R674 1K
R264 1K
R675 1K
E229 22/16
E228 2.2/50
C229 0.01
R240 20K
(45)
(44)
(43)
IC204 MC14066BFEL
R269 22K
R268 4.7K
E230 0.33/50
Q202 FMG1
R678 1K
NFP SW
VDD
Vss
E231 0.47/50
R241 240K
R243 750
R242 240K
R244 750
IC205 XRA4560F
BUFFER AMP
R251 220
E251 10/16
R259 100
R253 220
E253 10/16
R261 100
Q251 2SD1328
Q253 2SD1328
R263 7.5K
R262 7.5K
MUTE
R255 22K
C241 100P
R257 22K
C242 100P
C882 1000P
CB201
MUTE DRIVER
D609 DAN202K
Q601 FMC2
R866 10K
C883 1000P
ET201-1
L
R
(S.GND)
(GND)
(SWD+5V)
(REM IN)
ET201-2
ET201
Assy.,RCA Output & Remote Control Interface Connector
(IC601)
(AUDIO+B)
(P-ANT)
(IN-INT)
(ACC)
(POW-ON)
(BATT)
(A-MUTE)
(SWD+5V)
(REM IN)
R294 750
R292 750
E205 100/10
IC202 NJM4580ED
R313 10K
1/2Vcc
R293 750
R291 750
R301 10K
R302 15K
R316 220-1/4W
E306 10/16
MUTE DRIVER
Q301 DTC124K
IC301 TDA7384
Vcc1
Vcc2
NC
R295 220
E307 0.33/50
R296 220
E308 0.33/50
R298 220
E304 0.33/50
R297 220
E301 0.33/50
E305 10/16
SVR
TAB
E303 1/50
E302 47/16
C881 1000P
C884 100P
E880 3300/16
D880 DSA3A4
POWER IC
(P-ANT)
(OUT-REM)
(BATT)
(ACC)
(IN-INT)
(GND)
ET801
Speaker Output & Power Supply Connector
R214 10K
D602 DAN202K
Mini P.W.Board
From Main P.W.Board (CH402)
KNOB MINI
WARNING
REM-IND
5V
REMOCON
EJECT
KEY-4
GND
CB402
C403 0.027
IC402 RS-31
Vcc
REMOCON IC
FIRST AMP
LIMITER
BPF+TRAP
DETECTOR
WAVE FORM SHAPING
ABLC
TP1
PHOTO DIO.
IN+
IN-
fo
Rs
Cd
GND
TP2
GNDI
GND2
OUT
REMOCON RECEIVER
R463 33K
SW419 PWR/INTLZ
SW420 MODE/LOUD
SW418 EJECT
LD405 SML-010LTT87
LD404 SML-010LTT87
D405 1PS226
R462 390-1/4W
LD403 SML-010DTT87
R460 12-1/4W
PL411 6V-80mA
To Main P.W.Board (CB401)
NOSE-DET
NOSE MUTE
KNOB
LCD Vdd
KEY-1
KEY-2
KEY-3
LCD-INH
LCD-DATA
LCD-CLK
FUNC
LCD-CE
KEY-4
P-GND
NOSE-DET
E.S.GND
CH401
C404 0.01
R420 10K
R406 1K
D401 1PS226
D402 1PS226
D403 1PS226
D404 1PS226
D406 1PS226
R405 10K
R404 10K
R403 10K
R402 10K
R412 120K
C401 470P
Front P.W.Board
R470 1K
R408 4.3K
R409 1K
R410 1K
R411 1K
R413 1K
R407 6.2K
C402 0.027
R414 33-1/4W
R415 33-1/4W
R424 120-1/4W
R425 150-1/4W
R426 150-1/4W
R427 120-1/4W
R428 150-1/4W
R429 150-1/4W
R430 2.2K-1/4W
LD406 SML-010LTT87
LED DRIVER
PL401 9V-85mA
PL407 6V-80mA
PL408 6V-80mA
PL409 6V-80mA
PL410 6V-80mA
Q407 DTC124K
LCD DRIVER
IC401 LC75823W
CLOCK GENERATOR
COMMON DRIVER
LATCH & DRIVER
SHIFT REGISTER
ADDRESS DETECTOR
DI
CL
CE
OSC
Vss
INH
VDD
COM1
COM2
COM3
R439 1.5K
R440 2.2K
R441 3.3K
R442 5.6K
R443 10K
R444 33K
SW401 AF
SW402 F
SW403 MONO/3
SW404 UP/FWD
SW405 TUNE/A.ME
SW406 NEWS/2
SW407 PTY/1
R445 1.5K
R446 2.2K
R447 3.3K
R448 5.6K
SW408 VOL UP
SW409 SOURCE
SW410 BAND
SW411 DN/BWD
R450 1.5K
R451 2.2K
R452 3.3K
R453 5.6K
R454 10K
R449 33K
SW413 VOL DOWN
SW414 T.INFO
SW412 PLAY/PAUSE
SW415 M.I.X./4
SW416 RPT/5
SW417 SCAN/6
LCD401 LCD Display
1
2
3
4
5
A
B
C
D
E
F
G
H


IC205
IC402
IC401
Q251 Q253 Q601
Q407
BUFFER AMP
AUDIO SELECTOR & ELECTRICAL VOLUME
(45)
(44)
(43)
From Main P.W.Board (CH402)
KNOB MINI
WARNING
REM-IND
5V
REMOCON
EJECT
KEY-4
GND
CB402
Mini P.W.Board
C403 0.027
R463 33K
SW419 PWR/INTLZ
SW420 MODE/LOUD
SW418 EJECT
IC402 RS-31
REMOCON IC
FIRST AMP LIMITER
DETECTOR
BPF+ TRAP
WAVE FORM SHAPING
ABLC
PHOTO DIO.
TP1
TP2
Vcc
fo
Rs
RL
OUT
GND
Cd
GND1
GND2
IN+
IN-
LD405 SML-010LTT87
LD404 SML-010LTT87
D405 1PS226
R462 390-1/4W
LD403 SML-010DTT87
R460 12-1/4W
PL411 6V-80mA
REMOCON RECEIVER
To Main P.W.Board (CB401)
NOSE-DET
NOSE MUTE
KNOB
LCD VDD
KEY-1
KEY-2
KEY-3
LCD-INH
LCD-DATA
LCD-CLK
FUNC
LCD-CE
KEY-4
P-GND
NOSE-DET
E.S.GND
CH401
R420 10K
C404 0.01
D401 1PS226
D402 1PS226
D403 1PS226
D404 1PS226
D406 1PS226
R406 1K
R405 10K
R404 10K
R403 10K
R402 10K
R412 120K
C401 470P
R409 1K
R410 1K
R411 1K
R413 1K
R408 4.3K
R407 6.2K
C402 0.027
IC401 LC75823W
LCD DRIVER
CLOCK GENERATOR
COMMON DRIVER
LATCH & DRIVER
SHIFT REGISTER
ADDRESS DETECTOR
DI
CL
CE
OSC
Vss
VDD2
VDD1
INH
VDD
COM3
COM2
COM1
S52
S51
S50
S49
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
S11
S12
S13
S14
S15
S16
S17
S18
S19
S20
S21
S22
S23
S24
S25
S26
S27
S28
S29
S30
S31
S32
S33
S34
S35
S36
S37
S38
S39
S40
S41
S42
S43
S44
S45
S46
S47
S48
E231 0.47/50
R241 240K
R243 750
R251 220
E251 10/16
R259 100
C882 1000P
ET201-1
L
R
(REAR L-NFP)
(S.GND)
(REAR R-NFP)
CB201
(GND)
(SWD+5V)
(REM IN)
ET201-2
ET201
Assy.,RCA Output & Remote Control Interface Connector
Q251 2SD1328
R263 7.5K
MUTE
R262 7.5K
Q253 2SD1328
R255 22K
C241 100P
R257 22K
C242 100P
IC205 XRA4560F
BUFFER AMP
R244 750
R242 240K
R253 220
E253 10/16
R261 100
MUTE DRIVER
D609 DAN202K
Q601 FMC2
R866 10K
C883 1000P
(ACC)
(IN-INT)
D602 DAN202K
R214 10K
(P-ANT)
(OUT-REM)
(BATT)
(GND)
ET801
Speaker Output & Power Supply Connector
Front P.W.Board
R470 1K
R414 33-1/4W
R415 33-1/4W
R424 120-1/4W
R425 150-1/4W
R426 150-1/4W
R427 120-1/4W
R428 150-1/4W
R429 150-1/4W
R430 2.2K-1/4W
LD406 SML-010LTT87
LED DRIVER
PL401 9V-85mA
PL407 6V-80mA
PL408 6V-80mA
PL409 6V-80mA
PL410 6V-80mA
Q407 DTC124K
R439 1.5K
R440 2.2K
R441 3.3K
R442 5.6K
R443 10K
R444 33K
SW401 AF
SW402 F
SW403 MONO/3
SW404 UP/FWD
SW405 TUNE/A.ME
SW406 NEWS/2
SW407 PTY/1
R445 1.5K
R446 2.2K
R447 3.3K
R448 5.6K
SW408 VOL UP
SW409 SOURCE
SW410 BAND
SW411 DN/BWD
R450 1.5K
R451 2.2K
R452 3.3K
R453 5.6K
R454 10K
R449 33K
SW413 VOL DOWN
SW414 T.INFO
SW412 PLAY/PAUSE
SW415 M.I.X./4
SW416 RPT/5
SW417 SCAN/6
LCD401 LCD Display

IC201

1	4.34V	27	4.33V
2, 3	NC	28	4.34V
4	4.33V	29	4.35V
5, 6	4.35V	30	4.34V
7	4.33V	31, 32	4.35V
8~10	4.35V	33	4.33V
11	4.36V	34, 35	NC
12	4.33V	36, 37	4.33V
13, 14	4.36V	38	4.35V
15	2.54V	39	4.33V
16	PS	40	NC
17	4.27V	41	4.34V
18	8.56V	42, 43	4.33V
19, 20	0V	44	4.34V
21, 22	PS	45	NC
23, 24	4.33V	46	4.33V
25	4.31V	47	4.35V
26	4.34V	48	4.34V

IC202

1, 2	4.38V
3	4.35V
4	0V
5	1.43V
6, 7	8.17V
8	8.68V

IC203, 205

1~3	4.37V
4	0V
5~7	4.37V
8	8.68V

IC301

1, 2	0V	14	7V
3	7.29V	15	6.9V
4	4.28V	16	7.05V
5	7.27V	17	7.27V
6	14.25V	18	0V
7	7.26V	19	7.25V
8	0V	20	14.25V
9	7.28V	21	7.26V
10	7.21V	22	5.19V
11	6.99V	23	7.28V
12	6.95V	24	0V
13	0V	25	NC

IC204

1~4	4.37V	
5, 6	8.66V / 0V	NFP ON / OFF
7	0V	
8~11	4.37V	
12, 13	0V / 7.13V	NFP ON / OFF
14	8.67V	

IC401

1~51	PS
52	NC
53~55	PS
56	5.21V
57	5.05V
58, 59	NC
60	0V
61~64	PS

IC402

1	5.04V
2	4.83V
3	0V
4	0V

Q251

E	0V / PS	POWER ON / NFP SELECT
C	0V / 0V	MUTE ON / OFF
B	0.67V / 0V	MUTE ON / OFF

Q253

E	0V / PS	POWER ON / NFP SELECT
C	0V / 0V	MUTE ON / OFF
B	0.68V / 0V	MUTE ON / OFF

	E	C	B	MODE
Q270	PS	0V	0V	
Q271	PS	0V	0V	
Q301	0V / 0V	0V / 5.19V	4.78V / 0V	MUTE ON / OFF
Q407	0V	0V	5.06V	

	1	2	3	4	5	MODE
Q020	PS / 0V	PS / 0V	0V / 4.7V	0V / 0V	0V / 4.7V	FM LEVEL HIGH / LOW
Q202	0V / 7.12V	8.62V / 0V	0V / 7.12V	0V / 0V	4.9V / 0V	NFP ON / OFF
Q601	NC	14.17V / 0V	14.22V / 14.22V	3.12V / 0V	0V / 0V	MUTE ON / OFF

[Measuring Conditions]

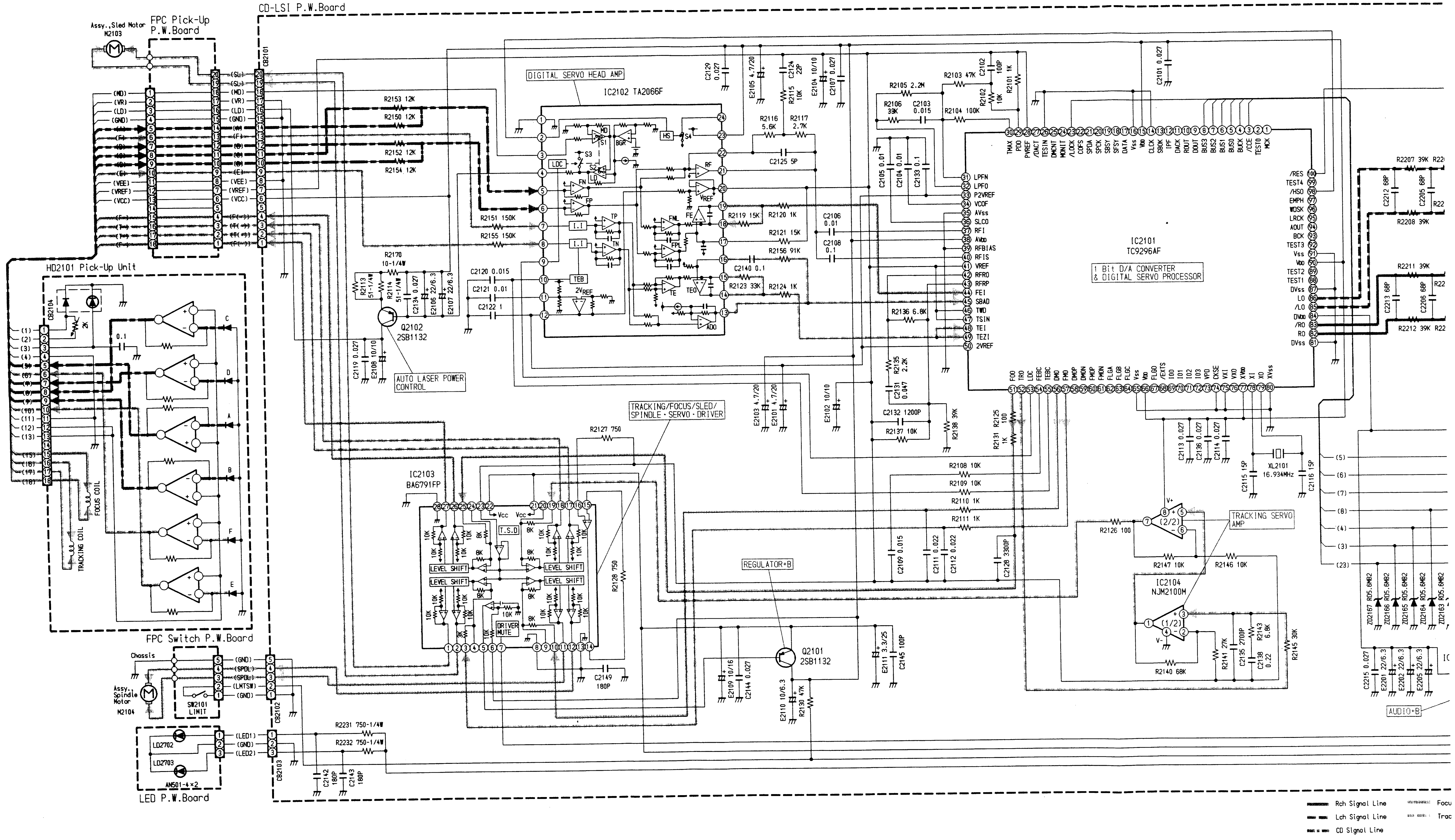
- Power Supply Voltage : DC14.4V
- Measuring Meter : Digital Multi Voltmeter
- Measuring Point Reference : Between Ground
- Measuring Conditions : FM .... 98.1MHz, No MOD.
  MW 999kHz
  LW 216kHz

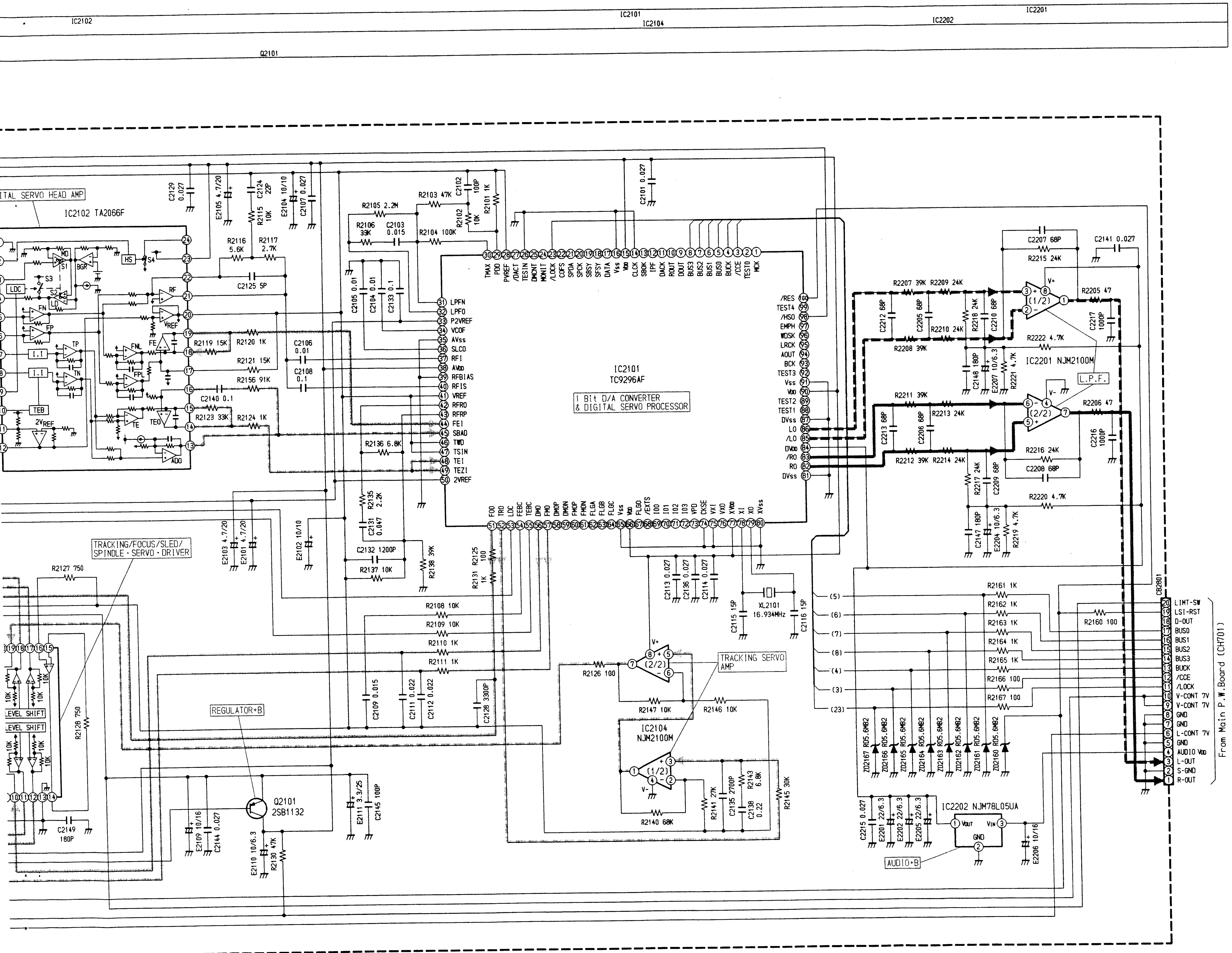
NOTE:

1. All resistance values are in ohms. K = 1,000
2. All capacitance values are in microfarads. P = $\frac{1}{1,000,000}$

Schematic Diagram (4/4)

IC	IC2103	IC2102		IC2101	IC2104	IC
Transistor (Q)	Q2102		Q2101			


1
2
3
4
5
CD-LSI P.W.Board
Assy.,Sled Motor M2103
FPC Pick-Up P.W.Board
CB2101
HD2101 Pick-Up Unit
CB2104
FOCUS COIL
TRACKING COIL
FPC Switch P.W.Board
Chassis
Assy., Spindle Motor M2104
SW2101 LIMIT
LED P.W.Board
LD2702
LD2703
AN501-4×2
CB2102
CB2103
DIGITAL SERVO HEAD AMP
IC2102 TA2066F
AUTO LASER POWER CONTROL
Q2102 2SB1132
TRACKING/FOCUS/SLED/SPINDLE·SERVO·DRIVER
IC2103 BA6791FP
LEVEL SHIFT
T.S.D
DRIVER MUTE
REGULATOR+B
Q2101 2SB1132
IC2101 TC9296AF
1 Bit D/A CONVERTER & DIGITAL SERVO PROCESSOR
TRACKING SERVO AMP
IC2104 NJM2100M
XL2101 16.934MHz
AUDIO+B
Rch Signal Line
Lch Signal Line
CD Signal Line
Focu
Trac
A
B
C
D
E
F
G
H


IC2102
IC2101
IC2104
IC2202
IC2201
Q2101
DIGITAL SERVO HEAD AMP
IC2102 TA2066F
IC2101
TC9296AF
1 Bit D/A CONVERTER
& DIGITAL SERVO PROCESSOR
IC2201 NJM2100M
L.P.F.
TRACKING/FOCUS/SLED/
SPINDLE・SERVO・DRIVER
TRACKING SERVO
AMP
IC2104
NJM2100M
REGULATOR+B
Q2101
2SB1132
IC2202 NJM78L05UA
AUDIO+B
XL2101
16.934MHz
CB2801
LIMT-SW
LSI-RST
D-OUT
BUS0
BUS1
BUS2
BUS3
BUCK
/CCE
/LOCK
V-CONT 7V
V-CONT 7V
GND
GND
L-CONT 7V
GND
AUDIO VDD
L-OUT
S-GND
R-OUT
From Main P.W.Board (CH701)

▬▬ Rch Signal Line
▬ ▬ Lch Signal Line
▬ • ▬ CD Signal Line
▬▬ Focus Error Signal Line
▬ ▬ Tracking Error Signal Line
▬▬ Spindle Servo Signal Line
▬ ▬ Sled Servo Signal line

IC2101

1, 2	NC	38	5V	66	5V
3~8	PS	39	0V	67~73	NC
9~13	NC	40	RF	74, 75	0V
14	0V	41	2.1V	76	NC
15	5V	42	4±0.2V	77	5V
16	0V	43	3.9±0.2V	78	1~3V
17~22	NC	44	2.1±0.1V	79	PS
23	0V	45	3.9±0.2V	80, 81	0V
24, 25	NC	46, 47	2.1V	82, 83	AUDIO (2.5V)
26	0V	48	2.1±0.2V	84	5V
27	NC	49	2.1±0.2V	85, 86	AUDIO (2.5V)
28	2.1V	50	4.2V	87	0V
29	2.1V+1.9, -2V	51	2.1±0.2V	88, 89	NC
30	2.1±0.1V	52	2.1±0.5V	90	5V
31	2.1V	53	5V	91	0V
32	2.1±0.2V	54	2.1V	92~97	NC
33	4.15V	55	-0.1V/2.1V	98	5V
34	1.1V	56	2.1V/5V	99	NC
35	0V	57	-0.1V/2.1V	100	5V
36	2.1V	58~64	NC		
37	RF	65	0V		

IC2102

1	0V	13	3.9V
2	5V	14~16	2.1V
3	0.18V	17, 18	2.2V
4	3.3V	19, 20	2.1V
5~8	2.1V	21	RF
9	5V	22	2.1V
10, 11	2.1V	23	5V
12	4.2V	24	NC

IC2103

1, 2	3.3V	14~16	2.1V
3	2.1V	17, 18	3.5V
4	NC	19	2.1V
5	6.3V	20	NC
6, 7	5V	21, 22	8.2V
8	0V	23	2.1V
9	NC	24	NC
10	2.1V	25	2.1V
11	3.9V	26, 27	3.5V
12	3.5V	28	0V
13	0V		

IC2104

1~3	2.1V
4	0V
5~7	2.1V
8	5V

IC2201

1~3	2.5V
4	0V
5~7	2.5V
8	5V

IC2202

1	5V
2	0V
3	8.3V

	E	C	B
Q2101	8.2V	5V	6.3V
Q2102	4.2V	1.9V	3.3V

[Measuring Conditions]

- Power Supply Voltage : DC14.4V
- Measuring Meter : Digital Multi Voltmeter
- Measuring Point Reference : Between Ground
- Measuring Condition : CD : Be Playing back the 1st. Music of the Test CD (TCD-782), DISC No. 1.

NOTE:

1. All resistance values are in ohms. K = 1,000
2. All capacitance values are in microfarads. $P = \frac{1}{1,000,000}$

Description of IC Terminal

95301W01 : IC601

No.	Symbol	I/O	Terminal Description
1	KEY1	I	Key Data Input Terminal. (A / D Input)
2	KEY2		
3	KEY3		
4	GND	–	GND Connection Terminal.
5	WARNING	O	Warning LED Control Terminal.
6	REM LED	O	Remote control LED Control Terminal.
7	V_{DD}	–	Power Supply Terminal of Device.
8	R_{XD}	I	RDS Monitor Input Terminal. (Pull-Up Connection)
9	T_{XD}	O	RDS Monitor Output Terminal.
10	FUNC	O	Function Indicator Control Terminal.
11	$\overline{\text{LCD-INH}}$	O	INH Signal Output Terminal to LCD Driver (LC75823W).
12	LCD-DATA	O	Serial Data Output Terminal to LCD Driver (LC75823W).
13	LCD-CLK	O	Serial Clock Output Terminal to LCD Driver (LC75823W).
14	LCD-CE	O	Serial Data Sync. Signal Output Terminal to LCD Driver (LC75823W).
15	NOSE-POW	O	Power Control Signal Output Terminal to Remote control Receiver.
16	NC	–	No Connection Terminal.
17	E^{2}P-CLK	I/O	Serial Clock Output Terminal to E^{2}P-ROM / RDS Decoder for Elevator Control Memory.
18	E^{2}P-DAT	I/O	Serial Data Output Terminal to E^{2}P-ROM / RDS Decoder for Elevator Control Memory.
19	CD-CE	O	Serial Data Sync. Signal Output Terminal to Digital Servo IC.
20	CD-CLK	O	Serial Clock Output Terminal to Digital Servo IC.
21	CD-DATA	O	Serial Data Output Terminal to Digital Servo IC.
22	LOAD-FWD	O	Disc Loading Motor Forward Driving Signal Terminal.
23	LOAD-BWD	O	Disc Loading Motor Backward Driving Signal Terminal.
24	TRY-FWD	O	Magazine Loading Motor Forward Driving Signal Terminal.
25	TRY-BWD	O	Magazine Loading Motor Backward Driving Signal Terminal.
26	L-CONT	O	Power Control Terminal for Mecha Servo.
27	LOAD-SW	I	Disc Loading Detection Terminal.
28	MAG-SW	I	Magazine Loading Detection Terminal.
29	PH-1	I	Photo Sensor Input Terminal.
30	FM LEVEL	O	FM Level Selection Control Signal Terminal. (FM LEVEL • HIGH : L / LOW : H)
31	LIMIT-SW	I	Inside Limit Detection Terminal.
32	NC	–	No Connection Terminal.
33	GND	–	GND Connection Terminal.
34	LSI-RESET	O	System Reset Terminal to Digital Servo IC.
35	PULL-UP	–	Pull-Up Connection Terminal.
36	BUS0	I/O	Communication Terminal to CD Signal Processor IC.
37	BUS1		
38	BUS2		
39	BUS3		
40	BUCK	O	

No.	Symbol	I/O	Terminal Description
41	CCE	O	Communication Terminal to CD Signal Processor IC.
42	LOCK	I	Lock Status Input Terminal.
43	VOL-DATA	O	Volume Data Output Terminal.
44	VOL-CLK	O	Volume Clock Output Terminal.
45	VOL-CE	O	Volume CE Output Terminal.
46	PLL-DI	I	Data Input Terminal from PLL.
47	MONO	I/O	MONO ON / OFF Signal Output Terminal. (MONO : H / ST : Input Port)
48	PLL-DO	O	Data Output Terminal to PLL.
49	PLL-CLK	O	Sync. Signal Output Terminal to PLL.
50	BUZZER	O	Guide Tone Signal Output Terminal.
51	PLL-CE	O	Communication CONT Signal Output Terminal to PLL.
52	DAVN	I	RDS Data Available Input Terminal.
53	$\overline{\text{FM-ST}}$ / SD	I	FM Stereo Signal Input and SD Detection Terminal. (ST Receiving : L / SD ON : H)
54	NFP	O	Fader Output Control Terminal at NFP. (NFP : H)
55	NC	–	No Connection Terminal.
56	T-SENS	I	Temperature Sensor Input Terminal. (H : T-SENS ON)
57	NC	–	No Connection Terminal.
58	ININT	I	ININT Signal Input Terminal. (ININT ON : H)
59	POW-ON	O	Power-ON Output Terminal.
60	$\overline{\text{RESET}}$	I	System Reset Terminal.
61	REMOCON	I	Input Terminal for Data Signal of Remote control. (Interrupt)
62	B-HOLD	I	BATT Detection Input Terminal. (Interrupt)
63	A-HOLD	I	ACC Detection Input Terminal. (Interrupt)
64	EJECT	I	Magazine EJECT Input Terminal. (Interrupt)
65	IF MUTE	O	IF MUTE Control Terminal. (Mute ON : H)
66	NC	–	No Connection Terminal.
67	A-MUTE	O	Audio Mute Output Terminal.
68	V_{DD}	–	VDD Connection Terminal.
69	X2	O	4.9152MHz OSC Connection Terminal.
70	X1	I	
71	GND	–	GND Connection Terminal.
72	NC	–	No Connection Terminal.
73	PULL-DOWN	–	Pull-Down Connection Terminal.
74	AV_{DD}	–	Analog Power Supply Terminal of A / D Converter. (V_{DD} Connection)
75	$AV_{REF}0$	–	Reference Voltage Input Terminal of A / D Converter. (V_{DD} Connection)
76	M / P	I	Multi Path Rejection Input Terminal. (A / D Connection)
77	LPS	I	Linear Position Sensor Input Terminal. (A / D Connection)
78	S-METER	I	S-METER Input Terminal. (A / D Connection)
79	PH-2	I	Photo Sensor Input Terminal.
80	NOSE-ON	I	Front Panel Detection Terminal. (A / D Connection)

Electrical Parts List

Resistor : Carbon resistors under 1/4 watts are not mentioned in the parts list, please confirm them by schematic diagram.

Capacitor : μF=microfarads,pF=picofarads

Abbreviations

RES.= Resistor
C.F.= Carbon Film
M.F.= Metal Film
M.O.= Metal Oxide Film
M.P.= Metal Plate
TR. = Transistor
TRANS.= Transformer
CP. = Chip

CAP.= Capacitor
ELY.= Electrolytic
CER.= Ceramic
MYL.= Mylar
TAN.= Tantalum
POLY.= Polystyrol
PP. = Polypropylene
PLT.= Polyethylene
PF. = Polyester Film

Symbol No.	Part No.	Description
Main P.W.Board		
IC's		
IC001	51T95465W01	AN7293SC
IC002	51T85265W02	LC72191JM
IC003	51T93336F01	NJM4558M
IC004	51T40941U02	MC14066BFEL
IC010	51T15132Y01	SAA6588T
IC012	51T52154F03	NJM2901V
IC051	51T75197W05	AN77L05M
IC201	51T95041W02	CXA1946AR
IC202	51T25576W08	NJM4580ED
IC203	51T25576W08	NJM4580ED
IC204	51T40941U02	MC14066BFEL
IC205	51T92001F21	XRA4560F
IC301	51T85153W01	TDA7384
IC601	51T95301W01	95301W01
IC602	51T85418W01	ST24C02FM6TR
IC603	51T93332F01	NJM2903M
IC661	51T95014F13	S-8052HNM-CR
IC701	51T15131Y01	NJM2360AM
IC721	51T45571W02	LB1836M
IC861	51T95563W01	S-80744HL
Transistors		
Q001	48T73888F08	CP., FMG1
Q002	48T73888F12	CP., FMC2
Q003	48T92368F01	CP., 2SD1760
Q004	48T84234F04	2SB1238
Q005	48T93828F04	2SD1994A
Q006	48T62966F03	CP., DTA124
Q007	48T62967F03	CP., DTC124K
Q008	48T62967F03	CP., DTC124K
Q009	48T62967F03	CP., DTC124K
Q010	48T84234F04	2SB1238
Q011	48T94606F06	CP., DTC114EU

Symbol No.	Part No.	Description
Q012	48T94606F04	CP., DTC143TU
Q013	48T94606F04	CP., DTC143TU
Q020	48T73888F08	CP., FMG1
Q201	48T93828F04	2SD1994A
Q202	48T73888F08	CP., FMG1
Q251	48T63788F04	CP., 2SD1328
Q253	48T63788F04	CP., 2SD1328
Q270	48T62967F22	CP., DTC144TK
Q271	48T62967F22	CP., DTC144TK
Q301	48T62967F03	CP., DTC124K
Q601	48T73888F12	CP., FMC2
Q611	48T62967F04	CP., DTC144K
Q641	48T73888F13	CP., FMC3
Q642	48T62967F01	CP., DTC143K
Q643	48T62967F01	CP., DTC143K
Q699	48T62967F03	CP., DTC124K
Q701	48T73888F12	CP., FMC2
Q702	48T15511W02	CP., 2SB1261
Q710	48T62967F02	CP., DTC114K
Q711	48T63420F01	CP., 2SA1037K
Q712	48T62967F02	CP., DTC114K
Q713	48T62967F02	CP., DTC114K
Q731	48T73888F12	CP., FMC2
Q761	48T73888F12	CP., FMC2
Q801	48T73888F12	CP., FMC2
Q811	48T63420F01	CP., 2SA1037K
Q812	48T62967F03	CP., DTC124K
Q813	48T84366F01	2SB1243
Q814	48T94606F06	CP., DTC114EU
Q841	48T93828F04	2SD1994A
Q842	48T52438F01	CP., 2SD601A
Q861	48T93828F04	2SD1994A
Q862	48T62966F03	CP., DTA124
Q863	48T62967F09	CP., DTC114TK
Q865	48T62966F01	CP., DTA143
Q881	48T84366F01	2SB1243
Q882	48T62967F05	CP., DTC143XK
Q891	48T62967F03	CP., DTC124K
Photo Transistors		
PT601	48T35506W03	PS3062-B.C
PT602	48T35506W03	PS3062-B.C

Symbol No.	Part No.	Description
Diodes		
D001	48T94335F01	CP., MA153
D002	48T63462F01	CP., DAN202K
D003	48T63462F01	CP., DAN202K
D601	48T68828F11	1SS133
D602	48T63462F01	CP., DAN202K
D603	48T75404W01	CP., 1SS353
D609	48T63462F01	CP., DAN202K
D699	48T63462F01	CP., DAN202K
D701	48T85269W02	SB040
D710	48T63462F01	CP., DAN202K
D721	48T75404W01	CP., 1SS353
D722	48T75404W01	CP., 1SS353
D723	48T75404W01	CP., 1SS353
D724	48T75404W01	CP., 1SS353
D812	48T85357W01	CP., 1PS226
D813	48T85270W02	MPG06G
D861	48T68828F11	1SS133
D862	48T63462F01	CP., DAN202K
D880	48T68580F02	DSA3A4
ZD001	48T25766W22	Zener, HZS9B2L
ZD002	48T25766W02	Zener, HZS6A2L
ZD201	48T25766W24	Zener, HZS9C1L
ZD841	48T25766W25	Zener, HZS9C2L
ZD861	48T25766W04	Zener, HZS6B1L
ZD862	48T25766W18	Zener, HZS7C3L
Buzzer		
BZ891	50T85541W01	CD11PA-XZ
Coils		
L001	24T65053W18	Inductor, 4.7μH
L002	24T16403W29	Inductor, 15μH
L003	24T65251W01	5CCB, 10.7MHz
L004	24T65053W23	Inductor, 12μH
L701	24T16271W13	220μH
Crystals		
CL002	91T45309W01	CER. Lock, 918.5KHz
XL001	91T85169W18	4.332MHz
XL003	91T85169W43	7.2MHz
XL601	91T95084W27	CP., 4.9152MHz

Symbol No.	Part No.	Description
Filters		
CF001	91T65501W02	CER., FFE1070MS
LPF001	91T75257W02	LPF, LPF11830KH
Z50	91T65112W06	EMI, CP. BK2125HM102
Z053	91T65112W06	EMI, CP. BK2125HM102
Z054	91T65112W06	EMI, CP. BK2125HM102
Z055	91T65112W06	EMI, CP. BK2125HM102
Z056	91T65112W06	EMI, CP. BK2125HM102
Z601	91T65112W06	EMI, CP. BK2125HM102
Z602	91T65112W06	EMI, CP. BK2125HM102
Z603	91T65112W06	EMI, CP. BK2125HM102
Surge Protector		
DSP001	48T70875F02	DSP-201M
Switch		
SW661	40T16096W03	Tact, SKHHLW (RESET)
Thermistor		
TH601	48T93439F06	100K ohm
Capacitors		
C001	08S65128F69	CP., 0.01μF
E001	23S75372W13	ELY., 0.47μF / 50V
C002	08T15399W03	CP., 0.047μF
E002	23S75372W05	ELY., 22μF / 16V
C003	08T15399W03	CP., 0.047μF
E003	23S75372W15	ELY., 1μF / 50V
C004	08T15399W01	CP., 0.022μF
E004	23S75372W15	ELY., 1μF / 50V
C005	08S35374W01	CP., 0.1μF
C006	08T65305W42	CP., 180pF
E006	23S75372W05	ELY., 22μF / 16V
C007	08S82122F53	CP., 470pF
E007	23S75372W14	ELY., 0.68μF / 50V
C008	08S65128F69	CP., 0.01μF
E008	23S75372W08	ELY., 100μF / 16V
C010	08S82122F49	CP., 330pF
C011	08S65128F79	CP., 0.027μF
C012	08S65128F66	CP., 5600pF
C013	08S35374W01	CP., 0.1μF

Symbol No.	Part No.	Description
C014	08S35374W01	CP., 0.1µF
C015	08S35374W01	CP., 0.1µF
C016	08S65128F63	CP., 3300pF
C017	08S65128F69	CP., 0.01µF
C018	08S65128F78	CP., 0.022µF
E018	23S75372W04	ELY., 10µF / 16V
C019	08S65128F78	CP., 0.022µF
C021	08S65128F79	CP., 0.027µF
C022	08T15399W02	CP., 0.033µF
C023	08S35374W01	CP., 0.1µF
C024	08S65128F57	CP., 1000pF
C025	08S65128F57	CP., 1000pF
C027	08S35374W01	CP., 0.1µF
C028	08T55487W02	CP., 0.22µF
C029	08S65128F59	CP., 1500pF
C034	08S35374W01	CP., 0.1µF
C035	08S65128F57	CP., 1000pF
C042	08S65128F69	CP., 0.01µF
C043	08T55390W31	TF, 0.15µF
C044	08S65128F69	CP., 0.01µF
C045	08T15399W02	CP., 0.033µF
C046	08T15399W02	CP., 0.033µF
E046	23S65134W23	CP. ELY., 100µF / 10V
C047	08T55401W37	TF, 0.1µF
C048	08S65128F78	CP., 0.022µF
E048	23S75372W08	ELY., 100µF / 16V
C049	08S65128F78	CP., 0.022µF
E049	23S82372F19	ELY., (B.P) 2.2µF / 50V
C050	08S35374W01	CP., 0.1µF
E050	23S75372W16	ELY., 2.2µF / 50V
C051	08S82122F23	CP., 27pF
C052	08S82122F23	CP., 27pF
C053	08S35374W01	CP., 0.1µF
C054	08S65128F61	CP., 2200pF
C055	08S82122F55	CP., 560pF
C056	08S82122F37	CP., 100pF
C057	08S82122F49	CP., 330pF
C058	08S35374W01	CP., 0.1µF
E058	23S75372W02	ELY., 100µF / 10V
E059	23S75372W06	ELY., 33µF / 16V
C061	08S65128F57	CP., 1000pF
C062	08S65128F57	CP., 1000pF
C064	08S82122F21	CP., 22pF
C065	08S82122F19	CP., 18pF
C090	08T15399W03	CP., 0.047µF
E202	23S75372W07	ELY., 47µF / 16V
E203	23S65134W33	CP. ELY., 33µF / 16V
E205	23S75372W02	ELY., 100µF / 10V
E207	23T25191W28	CP. ELY., 0.47µF / 50V

Symbol No.	Part No.	Description
E208	23T25191W28	CP. ELY., 0.47µF / 50V
E210	23T25191W30	CP. ELY., 1µF / 50V
E211	23S75372W15	ELY., 1µF / 50V
E212	23S75372W15	ELY., 1µF / 50V
E213	23S75372W15	ELY., 1µF / 50V
E214	23S75372W15	ELY., 1µF / 50V
E215	23S75372W04	ELY., 10µF / 16V
E216	23S75372W04	ELY., 10µF / 16V
E217	23T25191W67	CP. ELY., 10µF / 16V
E218	23T25191W67	CP. ELY., 10µF / 16V
E221	23S75372W04	ELY., 10µF / 16V
E222	23S75372W04	ELY., 10µF / 16V
E223	23S75372W04	ELY., 10µF / 16V
E224	23S75372W04	ELY., 10µF / 16V
C225	08S65128F60	CP., 1800pF
E225	23S75372W04	ELY., 10µF / 16V
C226	08S65128F60	CP., 1800pF
E226	23S75372W04	ELY., 10µF / 16V
E228	23S75372W16	ELY., 2.2µF / 50V
C229	08S65128F69	CP., 0.01µF
E229	23S75372W05	ELY., 22µF / 16V
E230	23S75372W12	ELY., 0.33µF / 50V
E231	23S75372W13	ELY., 0.47µF / 50V
C241	08S82122F37	CP., 100pF
C242	08S82122F37	CP., 100pF
E251	23T25191W67	CP. ELY., 10µF / 16V
E253	23T25191W67	CP. ELY., 10µF / 16V
E301	23S75372W12	ELY., 0.33µF / 50V
E302	23S75372W07	ELY., 47µF / 16V
E303	23S75372W15	ELY., 1µF / 50V
E304	23S75372W12	ELY., 0.33µF / 50V
E305	23S65134W65	CP. ELY., 1µF / 50V
E306	23S65134W31	CP. ELY., 10µF / 16V
E307	23S75372W12	ELY., 0.33µF / 50V
E308	23S75372W12	ELY., 0.33µF / 50V
C601	08S82122F23	CP., 27pF
E601	23S75372W03	ELY., 220µF / 10V
C602	08S82122F22	CP., 24pF
C605	08S65128F79	CP., 0.027µF
C609	08S35374W01	CP., 0.1µF
C623	08S82122F37	CP., 100pF
C631	08S65128F79	CP., 0.027µF
C661	08S82122F61	CP., 1000pF
E661	23S75372W04	ELY., 10µF / 16V
C701	08S65128F79	CP., 0.027µF
E701	23S75372W08	ELY., 100µF / 16V
C702	08S82122F39	CP., 120pF
E702	23S75372W03	ELY., 220µF / 10V
C703	08S65128F79	CP., 0.027µF

Symbol No.	Part No.	Description
E703	23S75372W03	ELY., 220μF / 10V
C704	08S65128F79	CP., 0.027μF
C705	08S82122F61	CP., 1000pF
C710	08T15807W05	CP., 0.1μF
C712	08S82122F65	CP., 1500pF
C721	08S65128F79	CP., 0.027μF
E721	23S75372W09	ELY., 4.7μF / 35V
E731	23S75372W05	ELY., 22μF / 16V
C802	08T95466W07	CP., 0.01μF
E811	23S75372W04	ELY., 10μF / 16V
C841	08S65128F69	CP., 0.01μF
C861	08T15807W05	CP., 0.1μF
E861	23S75372W15	ELY., 1μF / 50V
C862	08S65128F78	CP., 0.022μF
E880	23T75346W03	ELY., 3300μF / 16V
C881	08S82122F61	CP., 1000pF
C882	08S82122F61	CP., 1000pF
C883	08S82122F61	CP., 1000pF
C884	08T95420W01	CP., 100pF
C1001	08S82122F37	CP., 100pF
C1002	08S82122F37	CP., 100pF
C1003	08S82122F37	CP., 100pF
C1004	08S82122F37	CP., 100pF
C1009	08S82122F37	CP., 100pF
C1010	08S82122F37	CP., 100pF
C1011	08S82122F37	CP., 100pF
C1012	08S82122F37	CP., 100pF
C1013	08S82122F37	CP., 100pF
C1014	08S82122F37	CP., 100pF
C1016	08S82122F37	CP., 100pF
C1018	08S82122F37	CP., 100pF
C1019	08S82122F37	CP., 100pF
C1020	08S82122F37	CP., 100pF
C1021	08S82122F23	CP., 27pF
C1023	08S82122F37	CP., 100pF
C1025	08S82122F37	CP., 100pF
C1029	08S82122F37	CP., 100pF
C1031	08S82122F37	CP., 100pF
C1032	08S72783F23	CP., 100pF
C1033	08S82122F37	CP., 100pF
C1036	08S82122F20	CP., 20pF
C1037	08S82122F37	CP., 100pF
Resistors		(All resistors are chip 1/10W±5% unless otherwise noted.)
R001	06S95432W89	15K ohm
R002	06S95432W85	10K ohm
R003	06S95432W85	10K ohm
R004	06S95434W66	510 ohm 1/4W
R005	06S95432W61	1K ohm
R006	06S95432W61	1K ohm
R007	06S95434W25	10 ohm 1/4W
R008	06S95432W85	10K ohm
R009	06S95432W85	10K ohm
R010	06S95433W22	330K ohm
R011	06S95432W33	68 ohm
R012	06S95432W69	2.2K ohm
R013	06S95432W85	10K ohm
R014	06S95433W10	100K ohm
R015	06S95432W89	15K ohm
R016	06S95434W49	100 ohm 1/4W
R017	06S95432W77	4.7K ohm
R018	06S95432W61	1K ohm
R019	06S95432W61	1K ohm
R020	06S95433W26	470K ohm
R021	06S95433W10	100K ohm
R022	06S95433W18	220K ohm
R023	06S95432W95	27K ohm
R024	06S95432W93	22K ohm
R025	06S95433W02	47K ohm
R026	06S95432W77	4.7K ohm
R027	06S45674W97	47K ohm 1/16W
R028	06S95432W85	10K ohm
R029	06S95432W73	3.3K ohm
R030	06S95432W61	1K ohm
R031	06S95432W61	1K ohm
R032	06S95432W85	10K ohm
R034	06S95432W97	33K ohm
R035	06S95432W61	1K ohm
R036	06S95432W61	1K ohm
R037	06S95432W61	1K ohm
R038	06S95432W85	10K ohm
R039	06S95432W89	15K ohm
R040	06S95432W81	6.8K ohm
R041	06S95432W77	4.7K ohm
R042	06S95432W69	2.2K ohm
R043	06S95432W69	2.2K ohm
R044	06S95432W61	1K ohm
R045	06S95432W61	1K ohm
R046	06S95432W37	100 ohm
R047	06S95432W61	1K ohm
R048	06S95432W93	22K ohm
R049	06S95432W85	10K ohm
R050	06S95432W85	10K ohm
R051	06S95433W10	100K ohm
R052	06S95432W83	8.2K ohm
R053	06S95432W84	9.1K ohm

Symbol No.	Part No.	Description
R054	06S95433W10	100K ohm
R055	06S95432W81	6.8K ohm
R056	06S95432W69	2.2K ohm
R057	06S45675W22	470K ohm 1/16W
R058	06S45674W57	1K ohm 1/16W
R060	06S95432W79	5.6K ohm
R061	06S95432W85	10K ohm
R062	06S95432W47	270 ohm
R063	06S45674W43	270 ohm 1/16W
R064	06S95432W61	1K ohm
R065	06S45674W97	47K ohm 1/16W
R066	06S95432W93	22K ohm
R067	06S95432W13	10 ohm
R068	06S95432W09	4.7 ohm
R069	06S95432W91	18K ohm
R070	06S95432W85	10K ohm
R071	06S95434W81	2.2K ohm 1/4W
R073	06S95432W85	10K ohm
R074	06S95432W85	10K ohm
R075	06S95433W02	47K ohm
R076	06S95433W02	47K ohm
R077	06S95432W81	6.8K ohm
R078	06S95432W81	6.8K ohm
R079	06S95432W67	1.8K ohm
R080	06S95432W85	10K ohm
R081	06S95434W23	8.2 ohm 1/4W
R082	06S95432W85	10K ohm
R083	06S95434W23	8.2 ohm 1/4W
R084	06S45674W81	10K ohm 1/16W
R085	06S95432W95	27K ohm
R087	06S95432W61	1K ohm
R088	06S95434W23	8.2 ohm 1/4W
R201	06S95434W73	1K ohm 1/4W
R214	06S95432W85	10K ohm
R221	06S45674W73	4.7K ohm 1/16W
R222	06S45674W73	4.7K ohm 1/16W
R223	06S45674W91	27K ohm 1/16W
R224	06S45674W91	27K ohm 1/16W
R225	06S95432W81	6.8K ohm
R226	06S95432W81	6.8K ohm
R227	06S95432W89	15K ohm
R228	06S95432W89	15K ohm
R229	06S95433W19	240K ohm
R230	06S95433W19	240K ohm
R231	06S95432W58	750 ohm
R232	06S95432W58	750 ohm
R235	06S45674W54	750 ohm 1/16W
R236	06S45674W54	750 ohm 1/16W
R237	06S95432W73	3.3K ohm

Symbol No.	Part No.	Description
R238	06S95432W73	3.3K ohm
R239	06S95432W92	20K ohm
R240	06S95432W92	20K ohm
R241	06S95433W19	240K ohm
R242	06S95433W19	240K ohm
R243	06S95432W58	750 ohm
R244	06S95432W58	750 ohm
R251	06S95432W45	220 ohm
R253	06S95432W45	220 ohm
R255	06S95432W93	22K ohm
R257	06S95432W93	22K ohm
R259	06S95432W37	100 ohm
R261	06S95432W37	100 ohm
R262	06S95432W82	7.5K ohm
R263	06S95432W82	7.5K ohm
R264	06S45674W57	1K ohm 1/16W
R265	06S45674W57	1K ohm 1/16W
R266	06S45674W57	1K ohm 1/16W
R268	06S95432W77	4.7K ohm
R269	06S95432W93	22K ohm
R270	06S95433W02	47K ohm
R271	06S95433W02	47K ohm
R291	06S95432W58	750 ohm
R292	06S95432W58	750 ohm
R293	06S95432W58	750 ohm
R294	06S95432W58	750 ohm
R295	06S95432W45	220 ohm
R296	06S95432W45	220 ohm
R297	06S95432W45	220 ohm
R298	06S95432W45	220 ohm
R301	06S95432W85	10K ohm
R302	06S95432W89	15K ohm
R313	06S95432W85	10K ohm
R316	06S95434W57	220 ohm 1/4W
R601	06S95432W93	22K ohm
R602	06S95433W02	47K ohm
R604	06S45674W57	1K ohm 1/16W
R605	06S95432W85	10K ohm
R607	06S95432W85	10K ohm
R608	06S95432W85	10K ohm
R609	06S95432W85	10K ohm
R610	06S95433W26	470K ohm
R611	06S45674W33	100 ohm 1/16W
R612	06S45674W33	100 ohm 1/16W
R613	06S45674W33	100 ohm 1/16W
R614	06S45674W57	1K ohm 1/16W
R615	06S95433W02	47K ohm
R616	06S95432W61	1K ohm
R617	06S95432W85	10K ohm

Symbol No.	Part No.	Description
R618	06S95433W02	47K ohm
R619	06S95433W02	47K ohm
R620	06S95433W02	47K ohm
R621	06S95433W02	47K ohm
R622	06S45674W57	1K ohm 1/16W
R623	06S95433W18	220K ohm
R624	06S95433W26	470K ohm
R625	06S45674W57	1K ohm 1/16W
R626	06S45674W57	1K ohm 1/16W
R627	06S45674W57	1K ohm 1/16W
R628	06S45675W22	470K ohm 1/16W
R629	06S45674W57	1K ohm 1/16W
R630	06S95434W57	220 ohm 1/4W
R631	06S95433W02	47K ohm
R632	06S95432W79	5.6K ohm
R633	06S45674W33	100 ohm 1/16W
R634	06S45674W33	100 ohm 1/16W
R635	06S95432W61	1K ohm
R636	06S45674W57	1K ohm 1/16W
R637	06S95433W02	47K ohm
R639	06S95433W02	47K ohm
R640	06S95432W61	1K ohm
R642	06S95432W61	1K ohm
R643	06S95434W55	180 ohm 1/4W
R646	06S95434W73	1K ohm 1/4W
R647	06S95432W61	1K ohm
R648	06S45674W57	1K ohm 1/16W
R649	06S95432W85	10K ohm
R650	06S95432W87	12K ohm
R652	06S45674W57	1K ohm 1/16W
R653	06S45674W57	1K ohm 1/16W
R654	06S45674W57	1K ohm 1/16W
R655	06S45674W57	1K ohm 1/16W
R656	06S45674W81	10K ohm 1/16W
R658	06S45674W57	1K ohm 1/16W
R661	06S95432W93	22K ohm
R662	06S95432W77	4.7K ohm
R663	06S95432W71	2.7K ohm
R664	06S95432W61	1K ohm
R665	06S95432W61	1K ohm
R666	06S45674W57	1K ohm 1/16W
R667	06S45674W57	1K ohm 1/16W
R668	06S45674W57	1K ohm 1/16W
R669	06S45674W57	1K ohm 1/16W
R670	06S95432W61	1K ohm
R671	06S95432W61	1K ohm
R672	06S95432W79	5.6K ohm
R673	06S45674W57	1K ohm 1/16W
R674	06S45674W57	1K ohm 1/16W

Symbol No.	Part No.	Description
R675	06S45674W57	1K ohm 1/16W
R676	06S45674W57	1K ohm 1/16W
R678	06S45674W57	1K ohm 1/16W
R679	06S95432W93	22K ohm
R680	06S95433W10	100K ohm
R681	06S95433W02	47K ohm
R682	06S95433W02	47K ohm
R683	06S95433W02	47K ohm
R684	06S45674W33	100 ohm 1/16W
R685	06S45674W33	100 ohm 1/16W
R686	06S45674W33	100 ohm 1/16W
R697	06S95432W85	10K ohm
R698	06S95432W85	10K ohm
R699	06S95432W85	10K ohm
R701	06T15443W69	4.7K ohm
R702	06T15443W85	22K ohm
R703	06S95434W67	560 ohm 1/4W
R704	06S95434W67	560 ohm 1/4W
R705	06S95434W49	100 ohm 1/4W
R710	06S95432W93	22K ohm
R711	06S95432W93	22K ohm
R712	06S95432W85	10K ohm
R713	06S95432W69	2.2K ohm
R715	06S95432W73	3.3K ohm
R716	06S95432W37	100 ohm
R807	06S95433W10	100K ohm
R814	06S95432W85	10K ohm
R815	06S95434W97	10K ohm 1/4W
R816	06S95434W81	2.2K ohm 1/4W
R817	06S95432W85	10K ohm
R818	06S95434W79	1.8K ohm 1/4W
R819	06S95434W79	1.8K ohm 1/4W
R820	06S95434W23	8.2 ohm 1/4W
R821	06S95434W23	8.2 ohm 1/4W
R822	06S95434W23	8.2 ohm 1/4W
R823	06S95434W23	8.2 ohm 1/4W
R824	06S95434W97	10K ohm 1/4W
R828	06S95432W77	4.7K ohm
R841	06S95434W30	16 ohm 1/4W
R842	06S95434W30	16 ohm 1/4W
R843	06S95434W30	16 ohm 1/4W
R844	06S95434W30	16 ohm 1/4W
R845	06S95434W30	16 ohm 1/4W
R846	06S95434W30	16 ohm 1/4W
R849	06S95434W65	470 ohm 1/4W
R850	06S95432W63	1.2K ohm
R861	06S95434W89	4.7K ohm 1/4W
R862	06S95434W89	4.7K ohm 1/4W
R863	06S95434W89	4.7K ohm 1/4W

Symbol No.	Part No.	Description
R865	06S95433W02	47K ohm
R866	06S95432W85	10K ohm
R881	06S95434W97	10K ohm 1/4W
R882	06S95434W66	510 ohm 1/4W
R883	06S95434W66	510 ohm 1/4W
R884	06S95434W66	510 ohm 1/4W
R885	06S95434W66	510 ohm 1/4W
R891	06S95434W73	1K ohm 1/4W
R892	06S95432W85	10K ohm
RA601	06T45591W06	Block, CP. 1K ohmX4
RA602	06T45591W06	Block, CP. 1K ohmX4
VR003	18T55283W17	Variable, CP. 47K ohm
VR004	18T55283W19	Variable, CP. 100K ohm

Front P.W.Board

IC

IC401	51T15186Y01	LC75823W
or	51T55492W01	LC75850W

Transistor

Q407	48T62967F03	CP., DTC124K

Diodes

D401	48T85357W01	CP., 1PS226
D402	48T85357W01	CP., 1PS226
D403	48T85357W01	CP., 1PS226
D404	48T85357W01	CP., 1PS226
D406	48T85357W01	CP., 1PS226

Switches

SW401	40T55656W06	Tact, CP. SKQMAJ001 (AF)
SW402	40T55656W06	Tact, CP. SKQMAJ001 (F)
SW403	40T55656W06	Tact, CP. SKQMAJ001 (MONO/3)
SW404	40T55656W06	Tact, CP. SKQMAJ001 (UP/FWD)
SW405	40T55656W06	Tact, CP. SKQMAJ001 (TUNE/A.ME)
SW406	40T55656W06	Tact, CP. SKQMAJ001 (NEWS/2)
SW407	40T55656W06	Tact, CP. SKQMAJ001 (PTY /1)
SW408	40T55571W01	Tact, CP. SKQAXX (VOL UP)
SW409	40T55656W06	Tact, CP. SKQMAJ001 (SOURCE)
SW410	40T55656W06	Tact, CP. SKQMAJ001 (BAND)

Symbol No.	Part No.	Description
SW411	40T55656W06	Tact, CP. SKQMAJ001 (DN/BWD)
SW412	40T55656W06	Tact, CP. SKQMAJ001 (PLAY/PAUSE)
SW413	40T55571W01	Tact, CP. SKQAXX (VOL DOWN)
SW414	40T55656W06	Tact, CP. SKQMAJ001 (T. INFO)
SW415	40T55656W06	Tact, CP. SKQMAJ001 (M.I.X./4)
SW416	40T55656W06	Tact, CP. SKQMAJ001 (RPT/5)
SW417	40T55656W06	Tact, CP. SKQMAJ001 (SCAN/6)

Lamps

PL401	65T75231W01	9V-85mA
PL407	65T75233W01	CP., 6V-80mA
PL408	65T75233W01	CP., 6V-80mA
PL409	65T75233W01	CP., 6V-80mA
PL410	65T75233W01	CP., 6V-80mA

LED

LD406	48T65477W02	CP., SML-010LTT87 (RED)

Capacitors

C401	08S82122F53	CP., 470pF
C402	08T15399W04	CP., 0.027μF
C404	08S65128F69	CP., 0.01μF

Resistors

(All resistors are chip 1/10W±5% unless otherwise noted.)

R402	06S64995F77	10K ohm
R403	06S64995F77	10K ohm
R404	06S64995F77	10K ohm
R405	06S64995F77	10K ohm
R406	06S64995F53	1K ohm
R407	06S64995F72	6.2K ohm
R408	06S64995F68	4.3K ohm
R409	06S64995F53	1K ohm
R410	06S64995F53	1K ohm
R411	06S64995F53	1K ohm
R412	06S64996F04	120K ohm
R413	06S64995F53	1K ohm
R414	06S70072F17	33 ohm 1/4W
R415	06S70072F17	33 ohm 1/4W
R420	06S64995F77	10K ohm
R424	06S70072F31	120 ohm 1/4W
R425	06S70072F33	150 ohm 1/4W

Symbol No.	Part No.	Description
R426	06S70072F33	150 ohm 1/4W
R427	06S70072F31	120 ohm 1/4W
R428	06S70072F33	150 ohm 1/4W
R429	06S70072F33	150 ohm 1/4W
R430	06S70072F61	2.2K ohm 1/4W
R439	06S64995F57	1.5K ohm
R440	06S64995F61	2.2K ohm
R441	06S64995F65	3.3K ohm
R442	06S64995F71	5.6K ohm
R443	06S64995F77	10K ohm
R444	06S64995F89	33K ohm
R445	06S64995F57	1.5K ohm
R446	06S64995F61	2.2K ohm
R447	06S64995F65	3.3K ohm
R448	06S64995F71	5.6K ohm
R449	06S64995F89	33K ohm
R450	06S64995F57	1.5K ohm
R451	06S64995F61	2.2K ohm
R452	06S64995F65	3.3K ohm
R453	06S64995F71	5.6K ohm
R454	06S64995F77	10K ohm
R470	06S64995F53	1K ohm

Mini P.W.Board

IC

IC402	51T55639W01	RS-31

Diode

D405	48T85357W01	CP., 1PS226

LED's

LD403	48T65477W05	CP., SML-010DTT87 (ORG)
LD404	48T65477W02	CP., SML-010LTT87 (RED)
LD405	48T65477W02	CP., SML-010LTT87 (RED)

Switches

SW418	40T55656W06	Tact, CP. SKQMAJ001 (EJECT)
SW419	40T55656W06	Tact, CP. SKQMAJ001 (PWR/INTLZ)
SW420	40T55656W06	Tact, CP. SKQMAJ001 (MODE/LOUD)

Symbol No.	Part No.	Description

Lamp

PL411	65T75232W01	6V-80mA

Capacitor

C403	08T15399W04	CP., 0.027μF

Resistors

(All resistors are chip 1/10W±5% unless otherwise noted.)

R460	06S70072F07	12 ohm 1/4W
R462	06S70072F43	390 ohm 1/4W
R463	06S64995F89	33K ohm

CD-LSI P.W.Board

IC's

IC2101	51T75549W02	TC9296AF
IC2102	51T75548W01	TA2066F
IC2103	51T85408W01	BA6791FP
IC2104	51T16025W01	NJM2100M
IC2201	51T16025W01	NJM2100M
IC2202	51T11054W02	NJM78L05UA

Transistors

Q2101	48T80611F01	CP., 2SB1132
Q2102	48T80611F01	CP., 2SB1132

Diodes

ZD2160	48T62934F22	Zener, CP. RD5.6MB2
ZD2161	48T62934F22	Zener, CP. RD5.6MB2
ZD2162	48T62934F22	Zener, CP. RD5.6MB2
ZD2163	48T62934F22	Zener, CP. RD5.6MB2
ZD2164	48T62934F22	Zener, CP. RD5.6MB2
ZD2165	48T62934F22	Zener, CP. RD5.6MB2
ZD2166	48T62934F22	Zener, CP. RD5.6MB2
ZD2167	48T62934F22	Zener, CP. RD5.6MB2

Crystal

Symbol No.	Part No.	Description
XL2101	91T45433W92	CP., 16.934MHz

Capacitors

Symbol No.	Part No.	Description
C2101	08S65128F79	CP., 0.027μF
E2101	23S55311W42	CP. TAN., 4.7μF / 20V
C2102	08S45677W36	CP., 100pF
E1102	23S55311W23	CP. TAN., 10μF / 10V
C2103	08S65128F71	CP., 0.015μF
E2103	23S55311W42	CP. TAN., 4.7μF / 20V
C2104	08S65128F69	CP., 0.01μF
E2104	23S55311W23	CP. TAN., 10μF / 10V
C2105	08S65128F69	CP., 0.01μF
E2105	23S55311W42	CP. TAN., 4.7μF / 20V
C2106	08S65128F69	CP., 0.01μF
E2106	23T25191W62	CP. ELY., 22μF / 6.3V
C2107	08S65128F79	CP., 0.027μF
E2107	23T25191W62	CP. ELY., 22μF / 6.3V
C2108	08S35374W01	CP., 0.1μF
E2108	23S55311W23	CP. TAN., 10μF / 10V
C2109	08S65128F71	CP., 0.015μF
E2109	23T25191W67	CP. ELY., 10μF / 16V
E2110	23T25191W05	CP. ELY., 10μF / 6.3V
C2111	08S60102F24	CP., 0.022μF
E2111	23S55311W52	CP. TAN., 3.3μF / 25V
C2112	08T15399W01	CP., 0.022μF
C2113	08S65128F79	CP., 0.027μF
C2114	08S65128F79	CP., 0.027μF
C2115	08S45677W16	CP., 15pF
C2116	08S45677W16	CP., 15pF
C2119	08S65128F79	CP., 0.027μF
C2120	08S65128F71	CP., 0.015μF
C2121	08S65128F69	CP., 0.01μF
C2122	08T65289W03	CP., 1μF
C2124	08S45677W20	CP., 22pF
C2125	08S45677W07	CP., 5pF
C2128	08S45676W67	CP., 3300pF
C2129	08S65128F79	CP., 0.027μF
C2131	08T15399W03	CP., 0.047μF
C2132	08S45676W62	CP., 1200pF
C2133	08S35374W01	CP., 0.1μF
C2134	08S65128F79	CP., 0.027μF
C2135	08S45676W66	CP., 2700pF
C2136	08S65128F79	CP., 0.027μF
C2138	08T55487W02	CP., 0.22μF
C2140	08S35374W01	CP., 0.1μF
C2141	08S65128F79	CP., 0.027μF
C2142	08S45677W42	CP., 180pF
C2143	08S45677W42	CP., 180pF
C2144	08S65128F79	CP., 0.027μF
C2145	08S45677W36	CP., 100pF
C2147	08S45677W42	CP., 180pF
C2148	08S45677W42	CP., 180pF
C2149	08S45677W42	CP., 180pF
E2201	23T25191W62	CP. ELY., 22μF / 6.3V
E2202	23T25191W62	CP. ELY., 22μF / 6.3V
E2204	23T25191W05	CP. ELY., 10μF / 6.3V
C2205	08S45677W32	CP., 68pF
E2205	23T25191W62	CP. ELY., 22μF / 6.3V
C2206	08S45677W32	CP., 68pF
E2206	23T25191W67	CP. ELY., 10μF / 16V
C2207	08S45677W32	CP., 68pF
E2207	23T25191W05	CP. ELY., 10μF / 6.3V
C2208	08S45677W32	CP., 68pF
C2209	08S45677W32	CP., 68pF
C2210	08S45677W32	CP., 68pF
C2212	08S45677W32	CP., 68pF
C2213	08S45677W32	CP., 68pF
C2215	08S65128F79	CP., 0.027μF
C2216	08S82122F61	CP., 1000pF
C2217	08S82122F61	CP., 1000pF

Resistors

(All resistors are chip 1/16W±5% unless otherwise noted.)

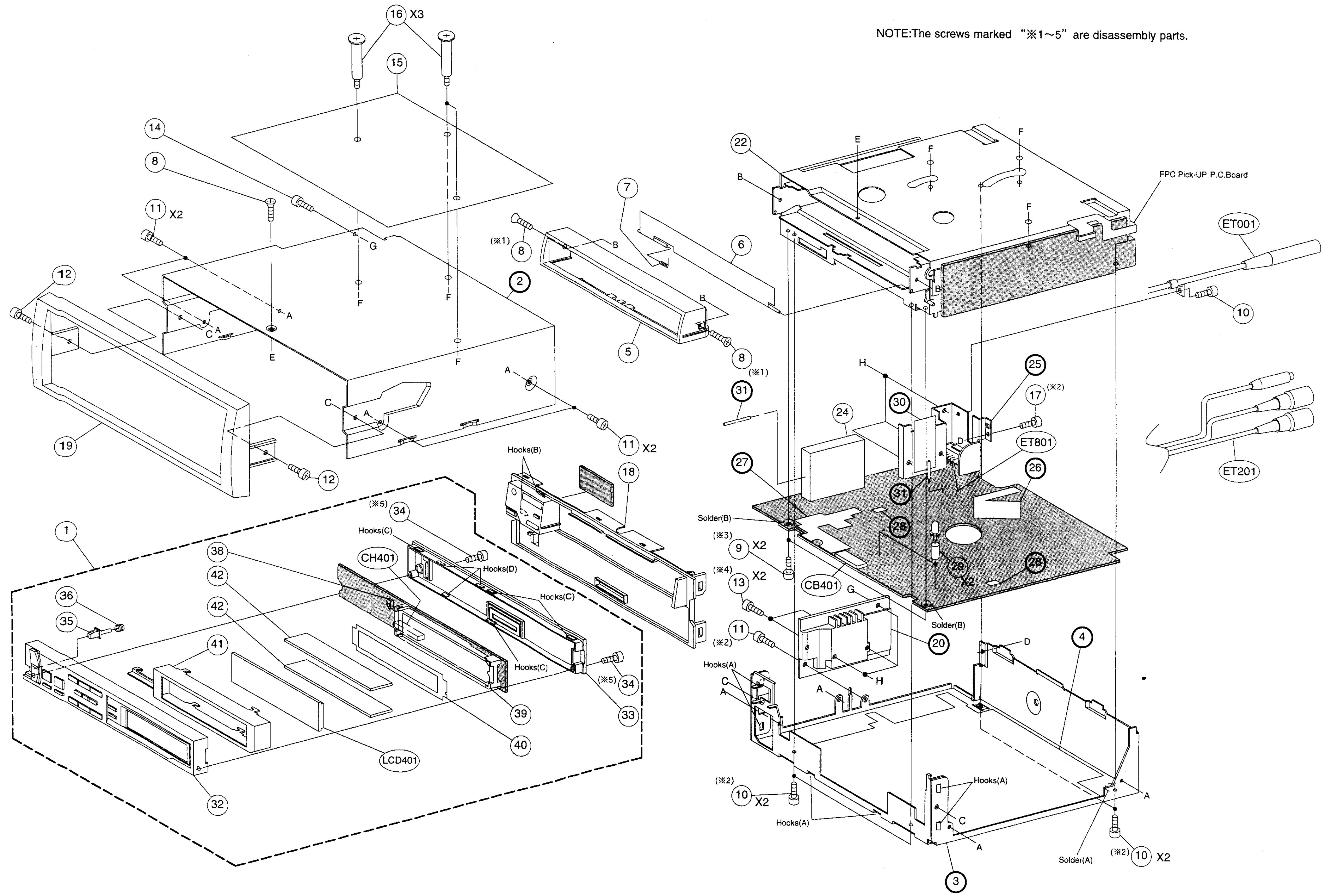
Symbol No.	Part No.	Description
R2101	06S45674W57	1K ohm
R2102	06S45674W81	10K ohm
R2103	06S45674W97	47K ohm
R2104	06S45675W06	100K ohm
R2105	06S45675W34	2.2M ohm
R2106	06S45674W93	33K ohm
R2108	06S45674W81	10K ohm
R2109	06S45674W81	10K ohm
R2110	06S45674W57	1K ohm
R2111	06S45674W57	1K ohm
R2113	06S70072F22	51 ohm 1/4W
R2114	06S70072F22	51 ohm 1/4W
R2115	06S45674W81	10K ohm
R2116	06S45674W75	5.6K ohm
R2117	06S45674W67	2.7K ohm
R2119	06S45674W85	15K ohm
R2120	06S45674W57	1K ohm
R2121	06S45674W85	15K ohm
R2123	06S45674W93	33K ohm
R2124	06S45674W57	1K ohm
R2125	06S45674W33	100 ohm
R2126	06S45674W33	100 ohm
R2127	06S45674W54	750 ohm
R2128	06S45674W54	750 ohm
R2130	06S45674W97	47K ohm
R2131	06S45674W57	1K ohm
R2135	06S45674W65	2.2K ohm
R2136	06S45674W77	6.8K ohm
R2137	06S45674W81	10K ohm
R2138	06S45674W95	39K ohm
R2140	06S45675W02	68K ohm
R2141	06S45674W91	27K ohm
R2143	06S45674W77	6.8K ohm
R2145	06S45674W92	30K ohm
R2146	06S45674W81	10K ohm
R2147	06S45674W81	10K ohm
R2150	06S45674W83	12K ohm
R2151	06S45675W10	150K ohm
R2152	06S45674W83	12K ohm
R2153	06S45674W83	12K ohm
R2154	06S45674W83	12K ohm
R2155	06S45675W10	150K ohm
R2156	06S45675W05	91K ohm
R2160	06S45674W33	100 ohm
R2161	06S45674W57	1K ohm
R2162	06S45674W57	1K ohm
R2163	06S45674W57	1K ohm
R2164	06S45674W57	1K ohm
R2165	06S45674W57	1K ohm
R2166	06S45674W33	100 ohm
R2167	06S45674W33	100 ohm
R2170	06S70072F05	10 ohm 1/4W
R2205	06S45674W25	47 ohm
R2206	06S45674W25	47 ohm
R2207	06S45674W95	39K ohm
R2208	06S45674W95	39K ohm
R2209	06S45674W90	24K ohm
R2210	06S45674W90	24K ohm
R2211	06S45674W95	39K ohm
R2212	06S45674W95	39K ohm
R2213	06S45674W90	24K ohm
R2214	06S45674W90	24K ohm
R2215	06S45674W90	24K ohm
R2216	06S45674W90	24K ohm
R2217	06S45674W90	24K ohm
R2218	06S45674W90	24K ohm
R2219	06S45674W73	4.7K ohm
R2220	06S45674W73	4.7K ohm
R2221	06S45674W73	4.7K ohm
R2222	06S45674W73	4.7K ohm
R2231	06S70072F50	750 ohm 1/4W
R2232	06S70072F50	750 ohm 1/4W

Miscellaneous

Symbol No.	Part No.	Description
CB401	09T85354W16	16P Connector
CH401	09T85353W16	16P Connector
ET001	01T95366W01	Assy., Antenna Receptacle
ET201	01T75188W16	Assy., RCA Output & Remote Control Interface Connector
ET801	09T55175W16	Speaker Output & Power Supply Connector
HD2101	88T85429W01	Pick-Up Unit, SF-U3000RAP
LCD401	65T15167Y01	LCD Display
LD2702	48T16057W03	LED, AN501-4 (RED)
LD2703	48T16057W03	LED, AN501-4 (RED)
M2101	01V84800W95	Assy., Loading Motor (7V-370mA)
M2102	01V84800W95	Assy., Tray Motor (7V-370mA)
M2103	01V84900W36	Assy., Sled Motor (7V-370mA)
M2104	01V84900W34	Assy., Spindle Motor (3V-90mA)
SW2101	40T71025F03	Switch, Detector SPPB120 (LIMIT)
SW2102	40T25956W01	Switch, Detector (LOADING)
SW2103	40T25956W01	Switch, Detector (MAGAZINE)
VR2101	18T55678W02	Volume, Slide 10K ohm (LINEAR POSITION SENSOR)

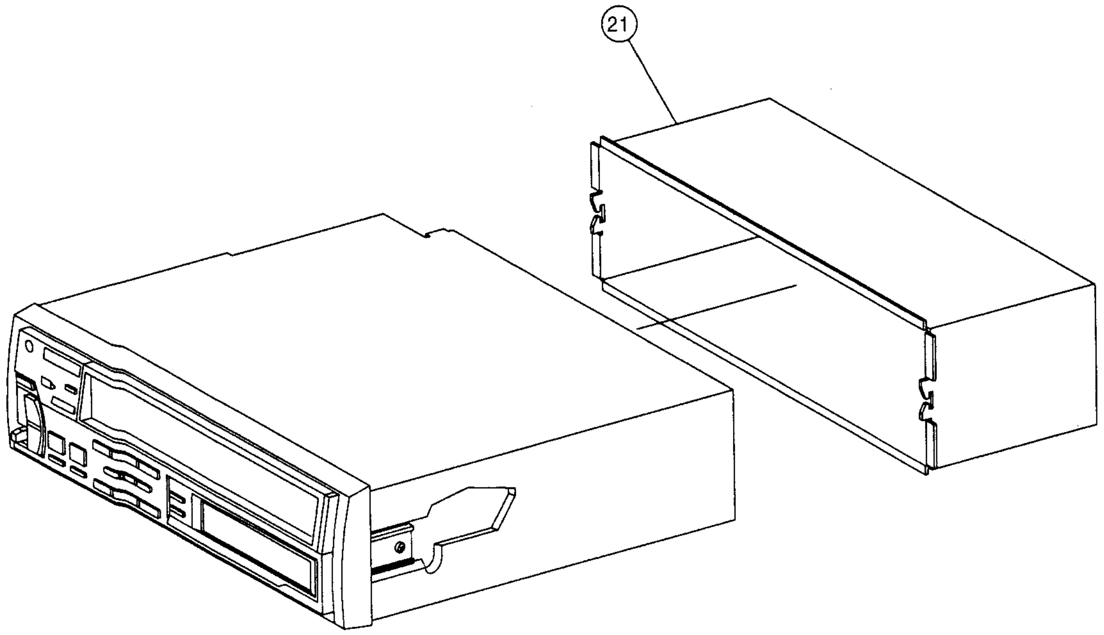
Exploded View (Cabinet) (1/2)

NOTE:The screws marked "※1~5" are disassembly parts.


16 X3
15
14
8
11 X2
12
19
2
A
C
E
F
G
(※1) 8
7
6
5
B
22
FPC Pick-UP P.C.Board
ET001
10
25
17 (※2)
ET801
26
ET201
30
24
31
27
28
29 X2
H
D
Solder(B)
(※3) 9 X2
(※4) 13 X2
CB401
11 (※2)
20
Hooks(A)
4
3
(※2) 10 X2
Solder(A)
Hooks(B)
18
1
(※5) 34
Hooks(C)
Hooks(D)
CH401
38
42
36
35
41
39
40
33
LCD401
32

1
2
3
4
5
A
B
C
D
E
F
G

Exploded View (Cabinet) (2/2)



Cabinet Assembly Parts List

NOTE:Parts without part number are not supplied.

Symbol No.	Index	Part No.	Description
1	4-A	01V11600Y13	Assy., Nose Unit
5	3-D	64C80997W01	Plate, Door
6	2-E	15D61425W06	Cover, Door
7	2-D	41A61454W01	Spring, Door
8		03S94385F32	Screw, Pan Nylok (M2X2.2)
9	4-E	03S44205G42	Screw, Pan (M2.6X4)
10		03S44205G07	Screw, Pan (M2.6X5)
11		03S44205G34	Screw, Pan (M2.6X5)
12		03S38013W13	Screw, Bind (M2.6X6)
13	4-E	03S38013W05	Screw, Pan (M2.6X16)
14	2-B	03S44205G76	Screw, Pan (M2.6X8)
15	1-C	54B81085W01	Card, Caution
16	1-C	03A48066W02	Screw, Transport (M3X34.3)
17	3-F	03S44205G30	Screw, Pan (M2.6X4)
18	3-D	13C80986W02	Assy., Front Escutcheon

Symbol No.	Index	Part No.	Description
19	3-A	33C80987W02	Assy., Face Plate
21		15D50406W01	Case, Inner
22	2-E	81D91137W01	3D Deck Mechanism, DS44L01A
24	3-E	77T15118Y01	FM/MW/LW Tuner Unit, ET-E354AP (FE001)
29	4-F	43A53357F02	Spacer
32	5-B	13D80970W07	Assy., Nosepiece
33	4-D	13C80979W01	Nose, Bottom
34		03S71677F56	Screw, Pan (M1.7X12)
35	4-A	36B80977W01	Knob, Release
36	4-A	41A50111W06	Spring, Knob Release
38	4-B	15A80548W01	Cover, LED
39	4-D	15C80989W01	Assy., Case LCD
40	5-D	26A80991W01	Reflector, Sheet
41	4-B	15B80992W01	Cover, LCD
42	4-B	75T85248W02	Rubber, Electric

Disassembly Instructions

1. Removal of Plate Door

(1) After pushing the Magazine switch inside the Cover Door with a thin plate etc. as shown in Figure 5, connect the power supply to the unit.

(2) Press the SOURCE button to activate the 3D mode.

(3) Press one of the Disc selection buttons. When the tray section is pulled forward, disconnect the power supply.
(To the extent that the screw No.8 (※1) can be seen from side view.) .... Screws No.8 (※1) (2-D, 3-E)

(4) Remove two screws No.8. .... Screws No.8 (※1) (2-D, 3-E)

<Assembly Note>

- ● After installing the Plate Door, connect the power supply and press the EJECT button.

2. Removal of Nose Unit

(1) Refer to the Owner's Manual (68P91508W77).

3. Removal of Front Escutcheon

(1) After removal of Face Plate, Top Cover and Plate Door, remove six Hooks (A). ..... Hooks (A) (4-E, 5-E, 5-F)

4. Removal of CD Deck Mechanism

(1) After removal of Front Escutcheon, remove one point Solder (A) .... Solder (A) (5-G)
and six screws No.10, 11, 17. Screw No.10, 11, 17 (※2) (3-F, 4-E, 5-E)

(2) CD Deck Mechanism with Main P.W.Board and Heat Sink can be removed completely.

- ● When removing and installing the FPC Pick-Up P.W.Board, make sure not to damage the P.W.Board.

<Disassembly/Assembly Notes>

- ● In case of removing the FPC Pick-Up P.W.Board from the CD-LSI P.W.Board, first short-circuit the pattern shown in Figure 6 by soldering and remove the P.W.Board. If not, the Pick-Up Unit may be damaged.After installing, be sure to resolder perfectly.

5. Removal of Main P.W.Board

(1) After removal of CD Deck Mechanism, remove two points Solder (B) and .... Solder (B) (4-E, 4-F)
two screws No.9. Screw No.9 (※3) (4-E)

(2) Remove two screws No.13 and remove Heat Sink. .... Screw No.13 (※4) (4-E)

(3) Remove two connectors from Main P.W.Board.

6. Removal of Mini P.W.Board

(1) After removal of Front Escutcheon, remove two Hooks (B). .... Hooks (B) (3-D)

7. Removal of Front P.W.Board

(1) After removal of Nose Unit, remove two screws No.34 .... Screws No.34 (※5) (3-C, 4-D)
and four Hooks (C), and remove Nose Bottom. Hooks (C) (4-C, 4-D)

(2) Remove three Hooks (D). .... Hooks (D) (4-C)

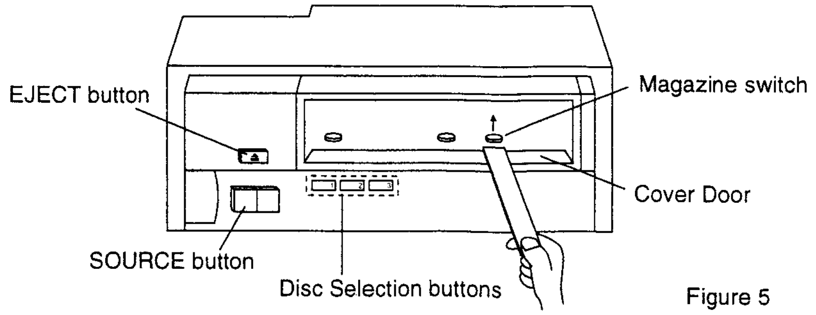


Figure 5

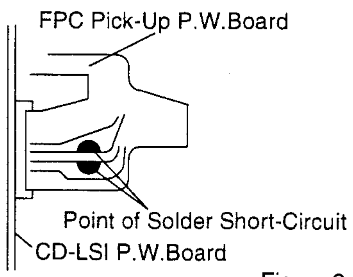


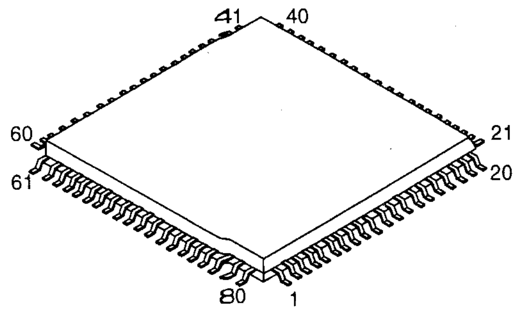
Figure 6

NOTE : For the screw No., Hook and Solder, refer to the Exploded View (Cabinet).

Semi-Conductor Lead Identifications

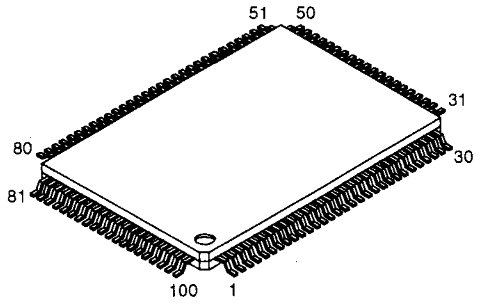
NOTE : For the parts not mentioned, refer to the Schematic Diagram.

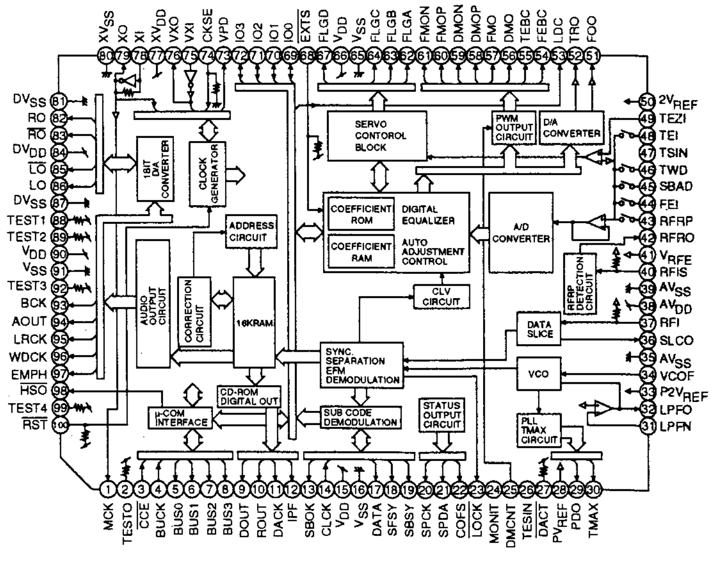
95301W01 : IC601


41
40
60
21
61
20
80
1

PIN NO.	CODE ADDRESS	I/O	PIN NO.	CODE ADDRESS	I/O	PIN NO.	CODE ADDRESS	I/O	PIN NO.	CODE ADDRESS	I/O
1	KEY1	I	21	CD-DATA	O	41	CCE	O	61	REMOCON	I
2	KEY2	I	22	LOAD-FWD	O	42	LOCK	I	62	B-HOLD	I
3	KEY3	I	23	LOAD-BWD	O	43	VOL-DATA	O	63	A-HOLD	I
4	GND	–	24	TRY-FWD	O	44	VOL-CLK	O	64	EJECT	I
5	WARNING	O	25	TRY-BWD	O	45	VOL-CE	O	65	IF MUTE	O
6	REM LED	O	26	L-CONT	O	46	PLL-DI	I	66	NC	–
7	V_{DD}	–	27	LOAD-SW	I	47	MONO	I/O	67	A-MUTE	O
8	R_{XD}	I	28	MAG-SW	I	48	PLL-DO	O	68	V_{DD}	–
9	T_{XD}	O	29	PH-1	I	49	PLL-CLK	O	69	X2	O
10	FUNC	O	30	FM LEVEL	O	50	BUZZER	O	70	X1	I
11	$\overline{\text{LCD-INH}}$	O	31	LIMIT-SW	I	51	PLL-CE	O	71	GND	–
12	LCD-DATA	O	32	NC	–	52	DAVN	I	72	NC	–
13	LCD-CLK	O	33	GND	–	53	$\overline{\text{FM-ST}}$ / SD	I	73	PULL-DOWN	–
14	LCD-CE	O	34	LSI-RESET	O	54	NFP	O	74	AV_{DD}	–
15	NOSE-POW	O	35	PULL-UP	–	55	NC	–	75	AV_{REF0}	–
16	NC	–	36	BUS0	I/O	56	T-SENS	I	76	M / P	I
17	E^2P-CLK	I/O	37	BUS1	I/O	57	NC	–	77	LPS	I
18	E^2P-DAT	I/O	38	BUS2	I/O	58	ININT	I	78	S-METER	I
19	CD-CE	O	39	BUS3	I/O	59	POW-ON	O	79	PH-2	I
20	CD-CLK	O	40	BUCK	O	60	$\overline{\text{RESET}}$	I	80	NOSE-ON	I

TC9296AF: IC2101 (DS44L01A)


51
50
31
80
30
81
100
1


XVSS 80
XO 79
XI 78
XVDD 77
VXO 76
VXI 75
CKSE 74
VPD 73
IO3 72
IO2 71
IO1 70
IO0 69
EXTS 68
FLGD 67
VDD 66
VSS 65
FLGC 64
FLGB 63
FLGA 62
FMON 61
FMOP 60
DMON 59
DMOP 58
FMO 57
DMO 56
TEBC 55
FEBC 54
LDC 53
TRO 52
FOO 51
DVSS 81
RO 82
RO 83
DVDD 84
LO 85
LO 86
DVSS 87
TEST1 88
TEST2 89
VDD 90
VSS 91
TEST3 92
BCK 93
AOUT 94
LRCK 95
WDCK 96
EMPH 97
HSO 98
TEST4 99
RST 100
50 2VREF
49 TEZI
48 TEI
47 TSIN
46 TWD
45 SBAD
44 FEI
43 RFRP
42 RFRO
41 VRFE
40 RFIS
39 AVSS
38 AVDD
37 RFI
36 SLCO
35 AVSS
34 VCOF
33 P2VREF
32 LPFO
31 LPFN
1 MCK
2 TESTO
3 CCE
4 BUCK
5 BUS0
6 BUS1
7 BUS2
8 BUS3
9 DOUT
10 ROUT
11 DACK
12 IPF
13 SBOK
14 CLCK
15 VDD
16 VSS
17 DATA
18 SFSY
19 SBSY
20 SPCK
21 SPDA
22 COFS
23 LOCK
24 MONIT
25 DMCNT
26 TESIN
27 DACT
28 PVREF
29 PDO
30 TMAX
1BIT D/A CONVERTER
CLOCK GENERATOR
ADDRESS CIRCUIT
AUDIO OUTPUT CIRCUIT
CORRECTION CIRCUIT
16KRAM
CD-ROM DIGITAL OUT
µ-COM INTERFACE
SERVO CONTOROL BLOCK
COEFFICIENT ROM
DIGITAL EQUALIZER
COEFFICIENT RAM
AUTO ADJUSTMENT CONTROL
CLV CIRCUIT
SYNC. SEPARATION EFM DEMODULATION
SUB CODE DEMODULATION
STATUS OUTPUT CIRCUIT
PWM OUTPUT CIRCUIT
D/A CONVERTER
A/D CONVERTER
RFRP DETECTION CIRCUIT
DATA SLICE
VCO
PLL TMAX CIRCUIT

MEMO

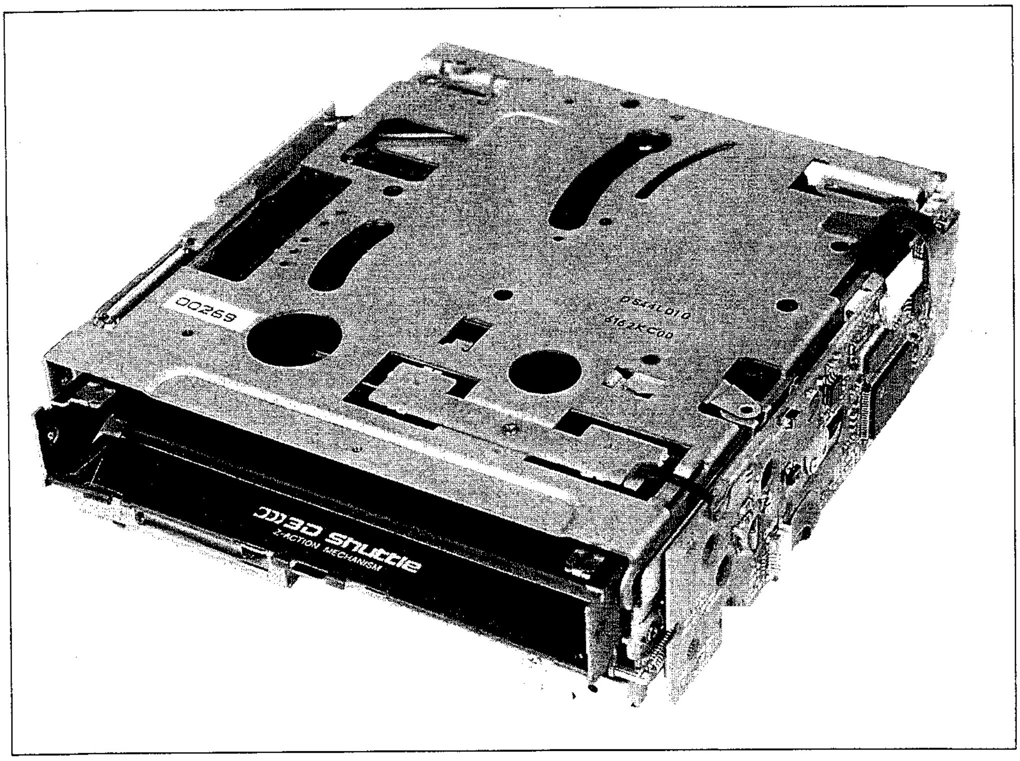
ALPINE®

SERVICE MANUAL

In-dash CD Changer Mechanism

V22900

3D Shuttle


00269
3D Shuttle
Z-ACTION MECHANISM

DS-L SERIES

Contents

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Mechanism Function Outline .... 12 to 16
New Technology 17
Basic Operation and Timing Chart of DS-L Mechanism .... 18 to 27
機能概要 .... 28 ～ 32
新技術メカニズム 33
DS-Lメカニズムの基本動作とタイミングチャート .... 34 ～ 43
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CD Mechanism Assembly Parts List .... 47 to 48

Component Disassembly and Assembly Notes
機能部品の分解方法及び組立上の注意

1. CD-LSI P.C.Board disassembly

- Before removing the FPC Pick- Up P.C.Board, short-circuit the patterns at the points shown in Figure 1-4.
  If not, the Pick-Up Unit (HD1101) may be destroied.

(1) Remove the FPC Pick-Up P.C.Board and the FPC Switch P.C.Board from the CD-LSI P.C.Board.

(2) Remove a point of Solder (A) and three screws ①. (See Figure 1)

(3) The CD-LSI P.C.Board with the LED P.C.Board and the FPC LED P.C.Board can be removed completely.

<**Assembly notes**>

- After connecting the FPC Pick- Up P.C.Board to the CD-LSI P.C.Board, remove the solder applied to short-circuit (when disassembling).
- When assembling the CD-LSI P.C.Board, make sure to tighten the screws in the order (※1→※2) shown in Figure 1.
- Make forming of the FPC LED P.C.Board as shown in Figure 1-2.
- Make forming of the FPC Pick-Up P.C.Board as shown in Figure 1-3.

1. CD-LSI基板の分解方法

- FPC Pick-Up基板を外す場合は、必ず1-4図に示すポイントをパターン・ショート（半田）してから外して下さい。ピック・アップ・ユニット（HD1101）を破壊する場合があります。

(1) FPC Pick-Up基板とFPC Switch基板をCD-LSI基板から外します。

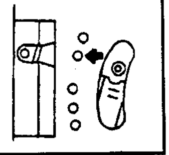
(2) 1箇所の半田（A）と3本のネジ①を外します。（1図参照）

以上でCD-LSI基板は、LED基板、FPC LED基板が付いた状態で一緒に外れます。

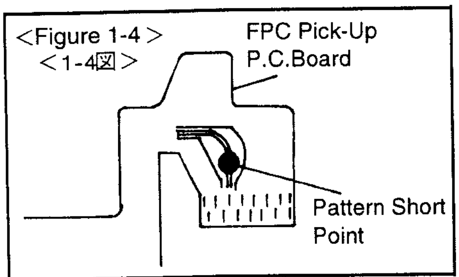
＜組立上の注意＞

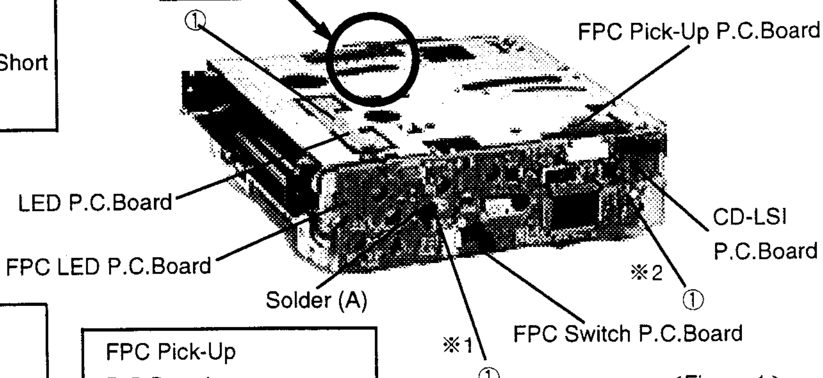
- FPC Pick-Up基板をCD-LSI基板に接続した後は、分解時にパターン・ショートさせた半田をしっかり取り除いて下さい。
- CD-LSI基板を組み立てる時、ネジの取り付けは必ず1図に示した※1→※2の順序で行って下さい。
- FPC LED基板のフォーミングは、1-2図の様にして下さい。
- FPC Pick-Up基板のフォーミングは、1-3図の様にして下さい。

<Figure 1-1>
<1-1図>



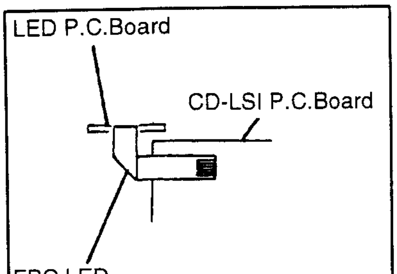
<Figure 1-4>
<1-4図>


FPC Pick-Up
P.C.Board
Pattern Short
Point

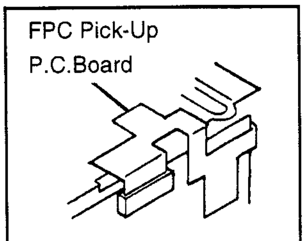

①
FPC Pick-Up P.C.Board
LED P.C.Board
FPC LED P.C.Board
Solder (A)
CD-LSI
P.C.Board
※2
①
FPC Switch P.C.Board
※1
①

① Tightening torque :
締付トルク：
1.5±0.25kg・cm

<Figure 1>
<1図>


LED P.C.Board
CD-LSI P.C.Board
FPC LED
P.C.Board

<Figure 1-2>
<1-2図>


FPC Pick-Up
P.C.Board

<Figure 1-3>
<1-3図>

2. Assy., Chassis Upper disassembly

(1) After removal of the CD-LSI P.C.Board, remove three screws ②, and remove the Bracket Bottom. (See Figure 2)

(2) Remove six screws ③. (See Figures 2, 3)

(3) Can be removed the Assy., Chassis Upper. (See Figure 4)

<Assembly notes>

- Before assembling the Assy., Chassis Upper, match the top side hole position on the Assy., Chassis Upper to the arrow position shown in Figure 1-1.
- Turn the black gear (Gear Cam) on the Assy., Chassis Upper fully clockwise until it stops (with the Chassis Tray pulled in). And assemble the Assy., Drive Unit to the specified position on the Assy., Chassis Upper with the Rack Timing moved to the arrow direction (See Figure 4). After assembling, make sure that the Rack Timing is set to the position as shown in Figure 3-1.
- After assembling the Bracket Bottom, make sure that there is no clearance at the shadow parts as shown in Figure 2-2.
- When assembling the Assy., Chassis Upper, make sure to tighten the screws in the order (※1→※2→※3→※4) shown in Figures 2, 3.

2. シャーシ・アッパー組立の分解方法

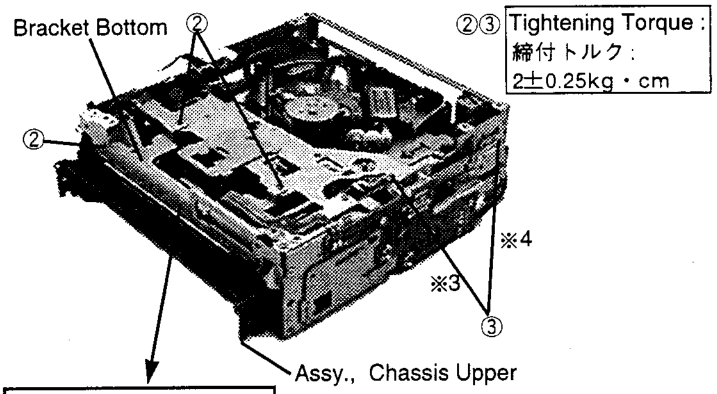
(1) CD-LSI基板を外した後で、3本のネジ②を外し、ブラケット・ボトムを外します。(2図参照)

(2) 6本のネジ③を外します。(2, 3図参照)

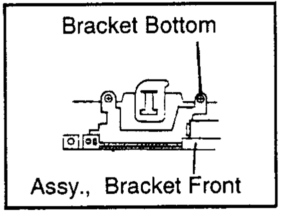
以上で、シャーシ・アッパー組立は外れます。(4図参照)

<組立上の注意>

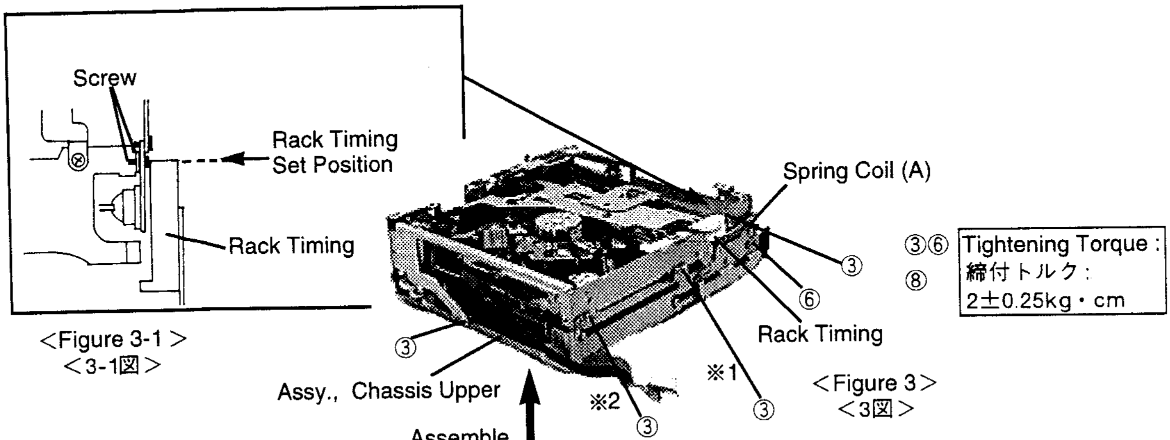
- シャーシ・アッパー組立を組み立てる前に、シャーシ・アッパー組立の上面の穴の位置を1-1図に示す矢印の位置に合わせて下さい。
- シャーシ・アッパー組立に組み込まれている黒いギア（ギア・カム）を時計方向に止まるまで回した（シャーシ・トレイが引き込まれた状態）後、ラック・タイミングを矢印の方向に寄せたままドライブ・ユニット組立をシャーシ・アッパー組立の所定の位置に組み立てて下さい。(4図参照)
組み立て後、ラック・タイミングの位置が3-1図の位置にある事を確認して下さい。
- ブラケット・ボトムを組み立てた後、3-1図に示す斜線部に隙間がない様にして下さい。
- シャーシ・アッパー組立を組み立てる時、ネジの取り付けは必ず2, 3図に示した※1→※2→※3→※4の順序で行って下さい。



<Figure 2>
<2図>



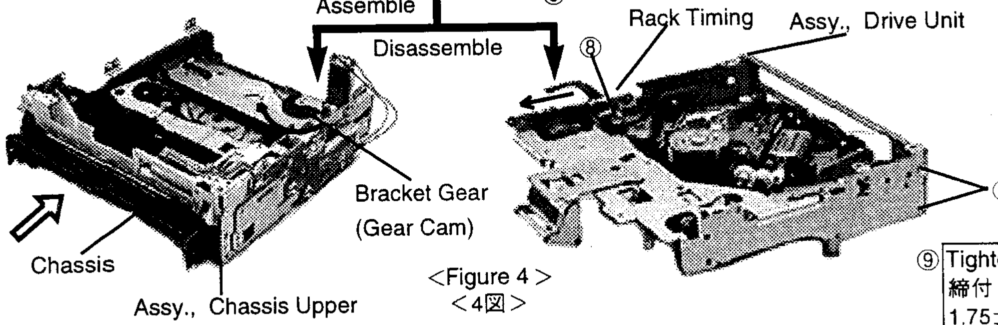
<Figure 2-2>
<2-2図>


Screw
Rack Timing
Set Position
Rack Timing
Spring Coil (A)
③
⑥
Rack Timing
③
Assy., Chassis Upper
※2
③
※1
③

<Figure 3-1 >
<3-1図>

<Figure 3>
<3図>

③⑥
⑧
Tightening Torque :
締付トルク:
2±0.25kg・cm


Assemble
Disassemble
Rack Timing
Assy., Drive Unit
⑧
Bracket Gear
(Gear Cam)
Chassis
Assy., Chassis Upper
⑨

<Figure 4 >
<4図>

⑨ Tightening Torque :
締付トルク:
1.75±0.25kg・cm

3. Switch P.C.Board disassembly

(1) Remove two screws ④ and seven points of solder (B). (See Figure 5)

NOTE : In case of removing the Solder (B) connecting the FPC Motor P.C.Board and the Switch P.C.Board, take care not to peel off the flexible pattern by high temperature.

(2) Can be removed the Switch P.C.Board.

NOTE : Take care not to bend the terminal of LPS (VR1101) after removing the Switch P.C.Board.

< **Assembly note** >

- Assemble the Switch P.C.Board moved to the arrow direction. (See Figure 5)

3. スイッチ基板の分解方法

(1) 2本のネジ④と7箇所の半田（B）を外します。（5図参照）

注意）

- FPC Motor基板とスイッチ基板をつなぐ半田（B）を外す場合、高温でフレキのパターンをはがす場合がありますので、注意して下さい。

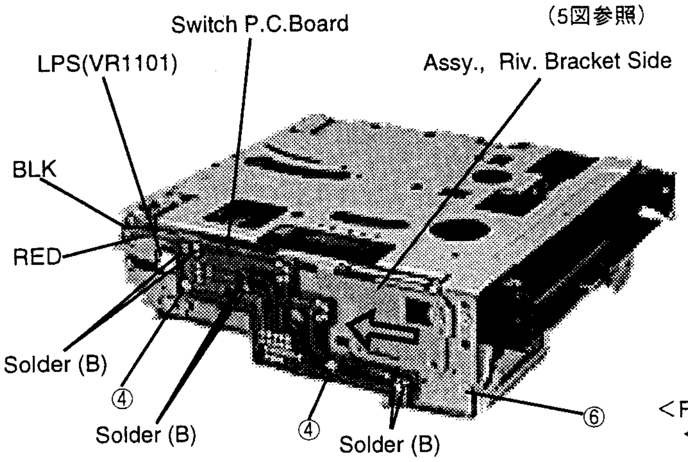
以上で、スイッチ基板は外れます。

注意）

- LPS（VR1101）の端子部分は曲がり易いので、スイッチ基板を外した後は、注意して下さい。

<組立上の注意>

- リベット・ブラケット・サイド組立を矢印の方向に寄せながら、スイッチ基板を組み立てて下さい。（5図参照）


Switch P.C.Board
LPS(VR1101)
Assy., Riv. Bracket Side
BLK
RED
Solder (B)
④
Solder (B)
④
Solder (B)
⑥

④
Tightening torque :
締付トルク:
1.5±0.25kg・cm

⑥
Tightening torque :
締付トルク:
2±0.25kg・cm

<Figure 5>
<5図>

4. Assy., Tray Motor (M1102) disassembly

(1) After removal of the Assy., Chassis Upper, remove two screws ⑤. (See Figure 6)

(2) The Assy., Tray Motor (M1102) with the Bracket Tray Motor can be removed completely.

<**Assembly note**>

- Mount the Assy., Tray Motor (M1102) so the Label Surface position is correct. (See Figure 6)

4. トレイ・モーター組立（M1102）の分解方法

(1) シャーシ・アッパー組立を外した後で、2本のネジ⑤を外します。(6図参照)

以上でトレイ・モーター組立（M1102）は、ブラケット・トレイ・モーターが付いた状態で一緒に外れます。

＜組立上の注意＞

- トレイ・モーター組立（M1102）はラベル面の向きに注意して組み立てて下さい。(6図参照)

5. Assy., Bracket Front disassembly

(1) After removal of the Assy., Chassis Upper, remove a Spring Coil (A) and four screws ⑥.
(See Figures 3, 5, 6)

(2) The Assy., Bracket Front with the Assy., Loading Motor (M1101) can be removed completely.

<**Assembly note**>

- When assembling the Assy., Bracket Front, make sure to tighten the screws in the order (※1→※2) shown in Figure 6.

5. ブラケット・フロント組立の分解方法

(1) シャーシ・アッパー組立を外した後で、1本のスプリング・コイル(A)と4本のネジ⑥を外します。
（3、5、6図参照）

以上でブラケット・フロント組立は、ローディング・モーター組立（M1101）が付いた状態で一緒に外れます。

＜組立上の注意＞

- ブラケット・フロント組立を組み立てる時、ネジの取り付けは必ず6図に示した※1→※2の順序で行って下さい。

6. Assy., Loading Motor (M1101) disassembly

(1) After removal of the Assy., Bracket Front, remove two screws ⑦. (See Figure 7)

(2) The Assy., Loading Motor (M1101) with the FPC Motor P.C.Board can be removed completely.

NOTE : The velcro tape is put on the FPC Motor P.C.Board. So, take care not to damage it when removing.

<**Assembly note**>

- Mount the Assy., Loding Motor (M1101) so the Label Surface position is correct. (See Figure 7)

6. ローディング・モーター組立（M1101）の分解方法

(1) ブラケット・フロント組立を外した後で、2本のネジ⑦を外します。(7図参照)

以上でローディング・モーター組立 (M1101) は、FPC Motor基板が付いた状態で一緒に外れます。

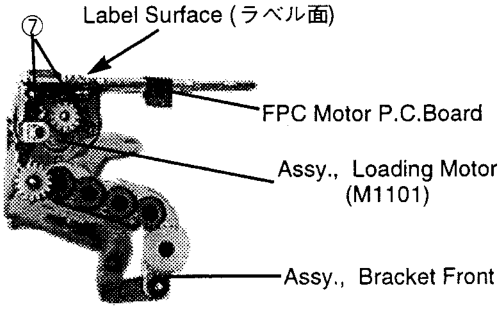
注意)

- FPC Motor基板は両面テープで貼り付けられていますので、外す時に損傷しない様、注意して下さい。

＜組立上の注意＞

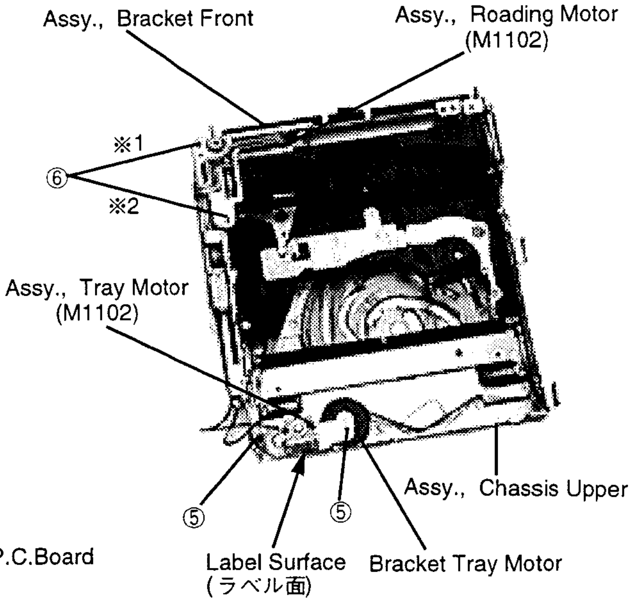
- ローディング・モーター組立(M1101) は、ラベル面の向きに注意して組み立てて下さい。(7図参照)

⑦
Tightening Torque :
締付トルク：
2±0.25kg・cm


⑦
Label Surface (ラベル面)
FPC Motor P.C.Board
Assy., Loading Motor (M1101)
Assy., Bracket Front

<Figure 7>
<7図>

⑤ ⑥
Tightening Torque :
締付トルク：
2±0.25kg・cm


Assy., Bracket Front
Assy., Roading Motor (M1102)
※1
⑥
※2
Assy., Tray Motor (M1102)
⑤
Label Surface (ラベル面)
⑤
Bracket Tray Motor
Assy., Chassis Upper

<Figure 6>
<6図>

NOTE : When proceeding steps after 7, make sure to work with electrostatic band put on.

7. Assy., Drive Unit disassembly

(1) After removal of the Assy., Chassis Upper, remove a screw ⑧. (See Figure 4)

(2) Remove four screws ⑨. Separate the Assy., Riv. Damper RR from the Assy., Riv. Damper (L) to remove the Assy., Drive Unit and four Spring Coils (B) connecting them. (See Figure 4, 8)

(3) Can be removed the Assy., Drive Unit. (See Figure 9)

< Assembly notes >

- When assembling the Stud (A) of the Assy., Drive Unit to the Damper, the position of the Stud (B) (refer to Figure 9) should be as shown in Figure 9-1.
- Insert the Lever Drive Lock in to the Rack Timing slot at the Assy., Riv. Damper RR side as shown in Figure 9-2.

注意）

- 分解方法７以降の作業に関しては、必ず静電バンドを付けて作業を行って下さい。

7. ドライブ・ユニット組立の分解方法

(1) シャーシ・アッパー組立を外した後で、1本のネジ⑧を外します。（4図参照）

(2) 4本のネジ⑨を外し、リベット・ダンパーRR組立とリベット・ダンパー（L）組立を分ける様に分解しながら、ドライブ・ユニット組立とそれぞれをつなぐ4本のスプリング・コイル(B)を外します。（4、8図参照）

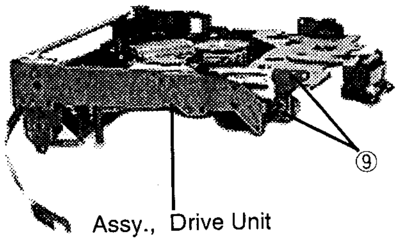
以上で、ドライブ・ユニット組立は外れます。（9図参照）

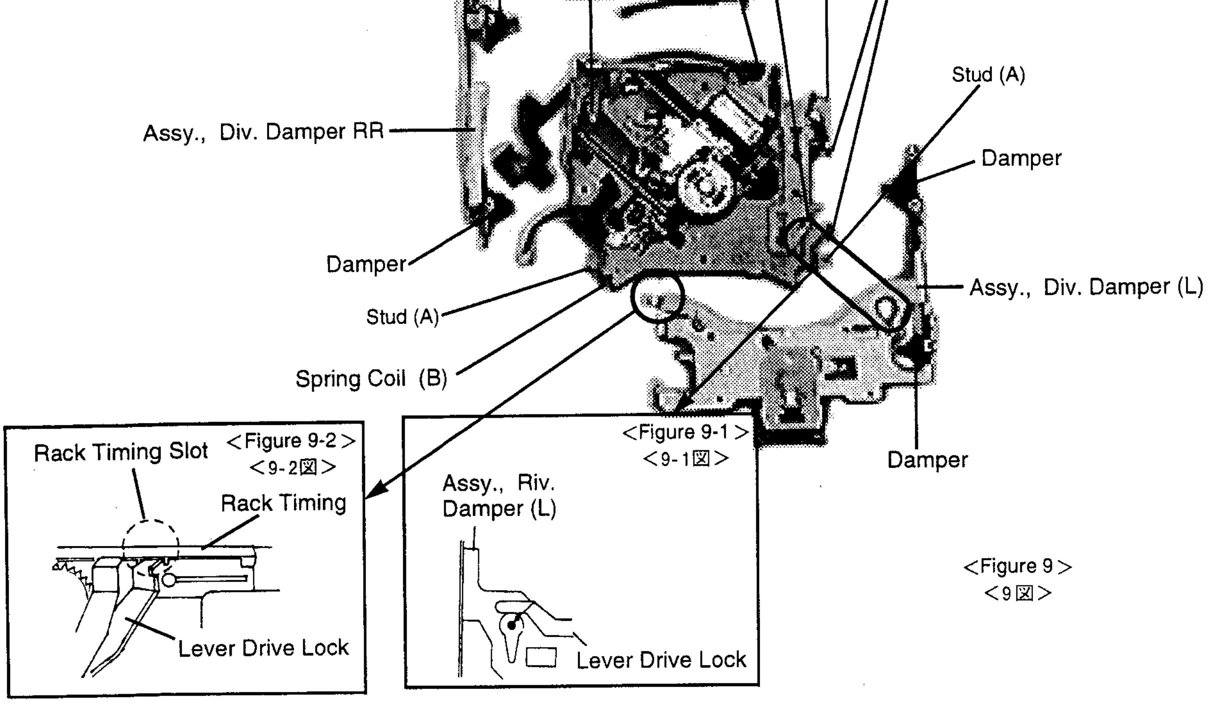
＜組立上の注意＞

- ドライブ・ユニット組立のスタッド（A）をダンパーに組んだ際、スタッド（B）（9図参照）の位置は9-1図に示す様にして下さい。
- リベット・ダンパー（L）組立側のレバー・ドライブ・ロックをリベット・ダンパーRR組立側のラック・タイミングの溝へ9-2図に示す様に挿入させて組み上げて下さい。

⑨ Tightening torque :
締付トルク :
1.75±0.25kg・cm

<Figure 8>
<8図>


⑨
Assy., Drive Unit


Damper
Assy., Drive Unit
Spring Coils (B)
Spring Coil (B)
Stud (B)
Stud (A)
Stud (A)
Damper
Assy., Div. Damper RR
Damper
Stud (A)
Assy., Div. Damper (L)
Spring Coil (B)
Damper
Rack Timing Slot
Rack Timing
Lever Drive Lock
Assy., Riv. Damper (L)
Lever Drive Lock

<Figure 9-2>
<9-2図>

<Figure 9-1>
<9-1図>

<Figure 9>
<9図>

8. FPC Switch P.C.Board disassembly

(1) After removal of the Assy., Drive Unit, remove two screws ⑩ and two points of Solder (C). (See Figure 10)

(2) Can be removed the FPC Switch P.C.Board.

NOTE : The velcro tape is put on the FPC Switch P.C.Board. So, take care not to damage it when removing.

8. FPC スイッチ基板の分解方法

(1) ドライブ・ユニット組立を外した後で、2本のネジ⑩と2箇所の半田（C）を外します。（10図参照）

以上で、FPC スイッチ基板は外れます。

注意）

- FPC Switch 基板は両面テープで貼り付けられていますので、外す時に損傷しない様、注意して下さい。

9. Assy., Arm Clamper disassembly

(1) After removal of the Assy., Drive Unit, remove a Spring Coil (C) . (See Figure 11)

(2) Remove a screw ⑪, and remove the Bracket Guide Disc. (See Figure 11)

(3) Remove a screw ⑫, and remove the Cam Clamper. (See Figure 11)

(4) Remove a screw ⑬ (See Figure 12) . Remove the Rod Lifter and two studs (C) while moving the Assy., Riv. slide Clamper Under to arrow direction (refer to Figure 10) . (See Figure 11, 12)

(5) Can be removed the Assy., Arm Clamper.

9. アーム・クランパー組立の分解方法

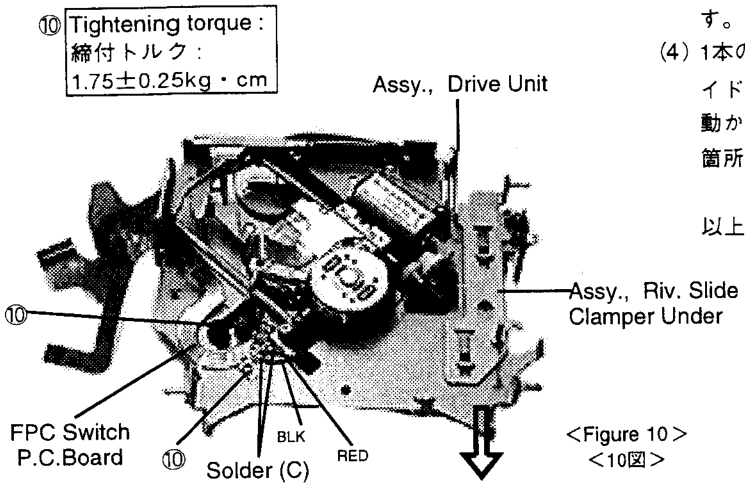
(1) ドライブ・ユニット組立を外した後で、1本のスプリング・コイル (C)を外します。（11図参照）

(2) 1本のネジ⑪ を外し、ブラケット・ガイド・ディスクを外します。（11図参照）

(3) 1本のネジ⑫ を外し、カム・クランパーを外します。（11図参照）

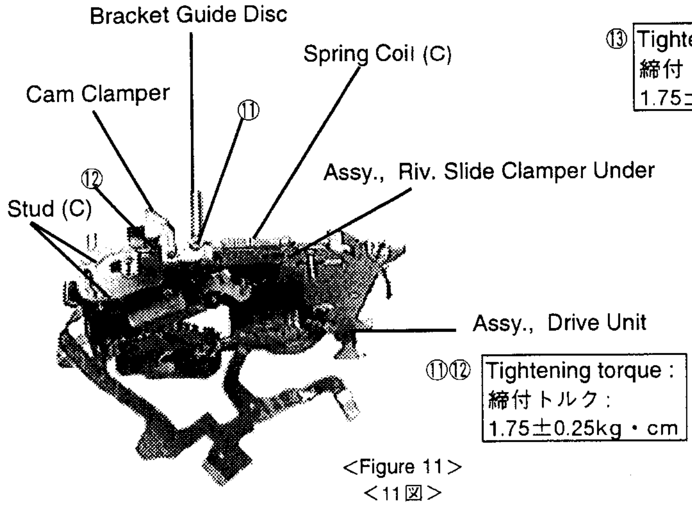
(4) 1本のネジ⑬ を外し（12図参照）、リベット・スライド・クランパー・アンダー組立を矢印の方向に動かしながら（10図参照）、ロッド・リフターと2箇所のスタッド（C）を外します。（11、12図参照）

以上で、アーム・クランパー組立は外れます。


Assy., Drive Unit
Assy., Riv. Slide Clamper Under
⑩
FPC Switch P.C.Board
⑩
BLK
Solder (C)
RED

⑩ Tightening torque :
締付トルク :
1.75±0.25kg・cm

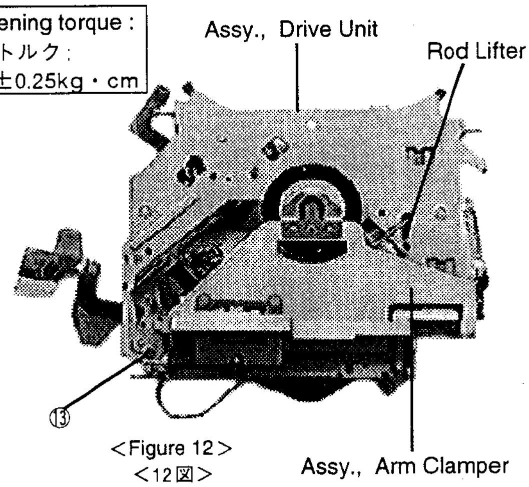
<Figure 10>
<10図>


Bracket Guide Disc
Spring Coil (C)
Cam Clamper
⑪
⑫
Assy., Riv. Slide Clamper Under
Stud (C)
Assy., Drive Unit

⑪⑫ Tightening torque :
締付トルク :
1.75±0.25kg・cm

<Figure 11>
<11図>

⑬ Tightening torque :
締付トルク :
1.75±0.25kg・cm


Assy., Drive Unit
Rod Lifter
⑬
Assy., Arm Clamper

<Figure 12>
<12図>

10. Assy., Spindle Motor (M1104) disassembly

(1) After removal of the Assy., Arm Clamper, move the Pick-Up Unit (HD1101) toward the arrow direction by rotating the gear section of the Assy., Sled Motor (M1103) by your finger.

(2) Remove two screws ⑭. (See Figure 13)

(3) Can be removed the Assy., Spindle Motor (M1104).

<Assembly notes>

- Assemble the Assy., Spindle Motor (M1104) by taking care of the mounting angle as shown in Figure 13-1.
- Make wire forming of the Assy., Spindle Motor (M1104) as shown in Figure 13-2.

10. スピンドル・モーター組立 (M1104)の分解方法

(1) アーム・クランパー組立を外した後で、スレッド・モーター組立 (M1103) のギア部分を指で回し、矢印の方向にピック・アップ・ユニット (HD1101) を動かします。(13図参照)

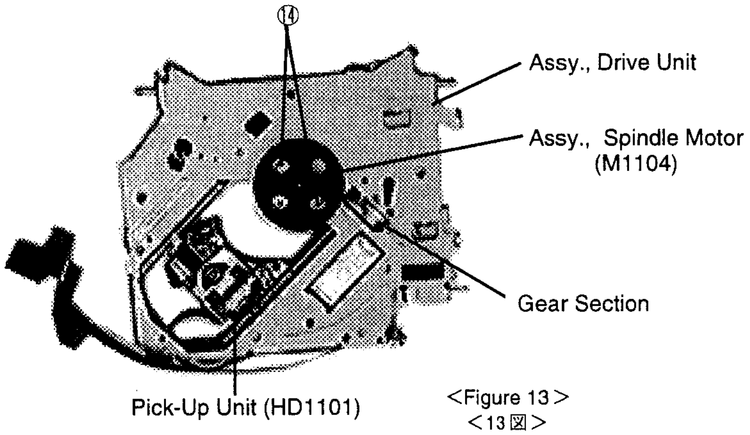
(2) 2本のネジ⑭ を外します。(13図参照)

以上で、スピンドル・モーター組立 (M1104)は外れます。

<組立上の注意>

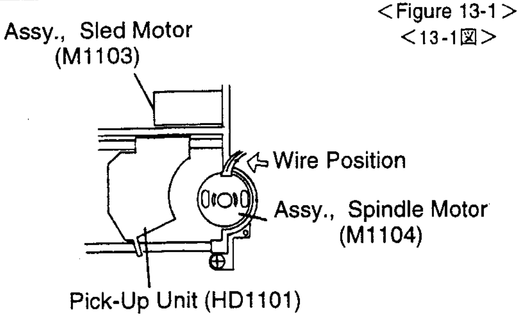
- スピンドル・モーター組立 (M1104)は、13-1図に従い、取り付け角度に注意して組み立てて下さい。
- スピンドル・モーター組立 (M1104)のワイヤー・フォーミングは、13-2図の様にして下さい。

⑭ Tightening torque :
締付トルク :
1.25±0.25kg・cm

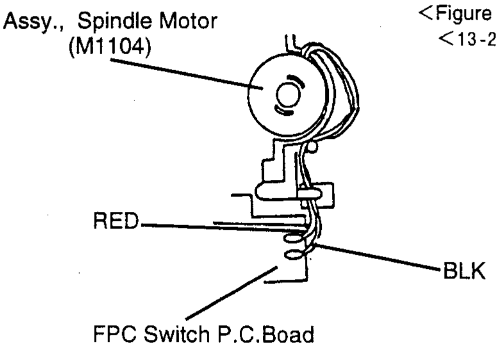

⑭
Assy., Drive Unit
Assy., Spindle Motor (M1104)
Gear Section
Pick-Up Unit (HD1101)

<Figure 13>
<13図>

<Figure 13-1>
<13-1図>


Assy., Sled Motor (M1103)
Wire Position
Assy., Spindle Motor (M1104)
Pick-Up Unit (HD1101)

<Figure 13-2>
<13-2図>


Assy., Spindle Motor (M1104)
RED
BLK
FPC Switch P.C.Boad

11. FPC Pick-Up P.C.Board disassembly

(1) After removal of the Assy., Spindle Motor (M1104), remove two screws ⑮, remove the Spring Nut (A)／(B). (See Figure 14)

(2) Remove two points of Solder (D). (See Figure 14)

NOTE : In case of removing the Solder (D), take care not to damage the flexible by high temperature.

(3) Remove a screw ⑯, remove the Bracket FPC PD/LD. (See Figure 14)

(4) Remove the connector of the Pick-Up Unit (HD1101) (refer to Figure 14-1).

NOTE : Take care not to damage the connector tab of the Pick-Up Unit (HD1101).

(5) Can be removed the FPC Pick-Up P.C.Board.

NOTE : The velcro tape is put on the FPC Pick-Up P.C.Board. So, take care not to damage it when removing.

<Assembly notes>

- Do not touch the lens of the Pick-Up Unit (HD1101).
- Take care not to damage the connector tab of the Pick-Up Unit (HD1101).
- Make forming of the FPC Pick-Up P.C.Board as shown in Figure 14-2.

11. FPC Pick-Up 基板の分解方法

(1) スピンドル・モーター組立 (M1104)を外した後で、2本のネジ⑮ を外し、スプリング・ナット (A)／(B) を外します。(14図参照)

(2) 2箇所の半田 (D) を外します。(14図参照)

注意)

- 半田 (D) を外す場合、高温でフレキを損傷する場合がありますので、注意して下さい。

(3) 1本のネジ⑯ を外し、ブラケット・FPC PD/LDを外します。(14図参照)

(4) ピック・アップ・ユニット (HD1101) のコネクターを外します。(14-1図参照)

注意)

- ピック・アップ・ユニット (HD1101) のコネクターの爪が折れ易いので、取り扱いに注意して下さい。

以上で、FPC Pick-Up 基板は外れます。

注意)

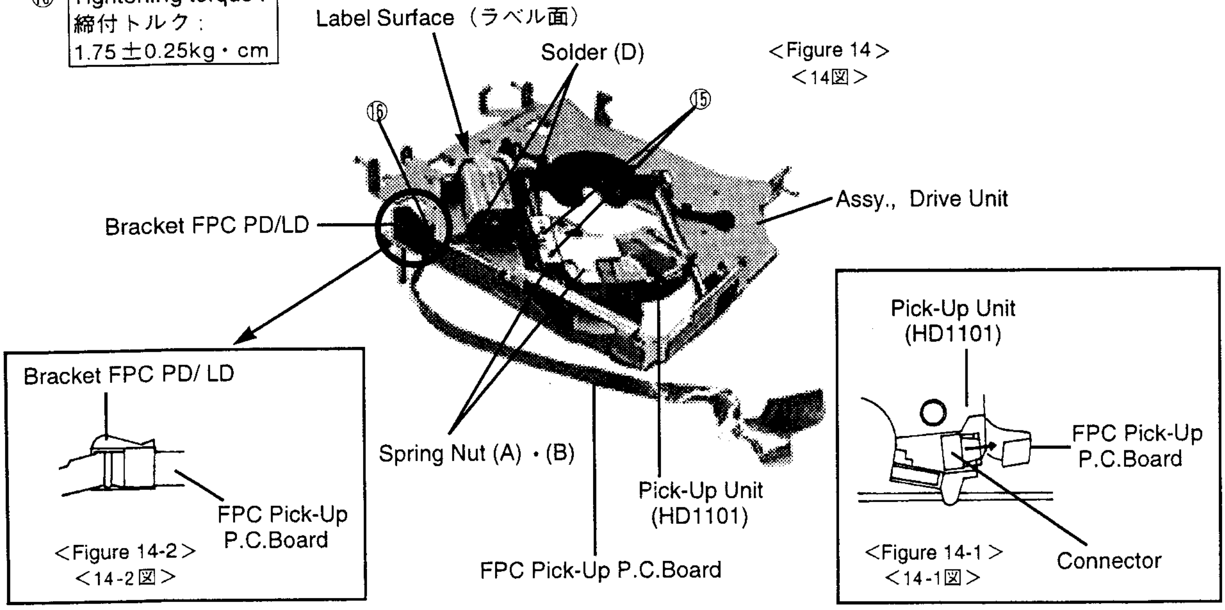
- FPC Pick-Up 基板は両面テープで貼り付けられていますので、外す時に損傷しない様、注意して下さい。

<組立上の注意>

- ピック・アップ・ユニット (HD1101) のレンズには手を触れない様、注意して下さい。
- ピック・アップ・ユニット (HD1101) のコネクターの爪が折れ易いので、取り扱いに注意して下さい。
- FPC Pick-Up 基板のフォーミングは14-2図の様にして下さい。

⑮ Tightening torque :
締付トルク :
1.25±0.25kg・cm

⑯ Tightening torque :
締付トルク :
1.75±0.25kg・cm


Label Surface（ラベル面）
Solder (D)
⑯
⑮
Assy., Drive Unit
Bracket FPC PD/LD
Bracket FPC PD/ LD
FPC Pick-Up P.C.Board
Spring Nut (A)・(B)
Pick-Up Unit (HD1101)
FPC Pick-Up P.C.Board
Pick-Up Unit (HD1101)
FPC Pick-Up P.C.Board
Connector

<Figure 14>
<14図>

<Figure 14-2>
<14-2図>

<Figure 14-1>
<14-1図>

12. Pick-Up Unit (HD1101) disassembly

NOTE : Do not touch the lens of the Pick-Up Unit (HD1101).

(1) After removal of the FPC Pick-Up P.C.Board , remove two screws ⑰ ,and remove the shaft Pick-Up and the Bracket shaft. (See Figure 15)

(2) Remove a screw ⑱ , and remove the Bracket Rod Lifter. (See Figure 15)

(3) Remove two screws ⑲ , and remove the Bracket Base . (See Figure 15)

(4) Remove the Gear Middle from the Bracket Base, and remove the Assy., Lead Screw. (See Figure 15)

(5) Can be removed the Pick-Up Unit (HD1101). (See Figure 16)

12. ピック・アップ・ユニット（HD1101）の分解方法

注意)

- ピック・アップ・ユニット（HD1101）のレンズには手を触れない様、注意して下さい。

(1) FPC Pick-Up 基板を外した後で、2本のネジ⑰ を外し、シャフト・ピック・アップとブラケット・シャフトを外します。(15図参照)

(2) 1本のネジ ⑱ を外し、ブラケット・ロッド・リフターを外します。(15図参照)

(3) 2本のネジ ⑲ を外し、ブラケット・ベースを外します。(15図参照)

(4) ブラケット・ベースからギア・ミドルを外し、リード・スクリュー組立を外します。(15図参照)

以上で、ピック・アップ・ユニット（HD1101）は外れます。

13. Assy., Sled Motor (M1103) disassembly

(1) After removal of the Pick-Up Unit (HD1101), remove two screws ⑳ . (See Figure 16)

NOTE : When removing the screw ⑳ , take care not to damage the gear section.

(2) Can be removed the Assy., Sled Motor (M1103). (See Figure 16)

< Assembly notes >

- Mount the Assy., Sled Motor (M1103) so the Label Surface position is correct. (See Figure 16)
- When assembling the Assy., Sled Motor (M1103) , take care not to damage the gear section.

13. スレッド・モーター組立 (M1103)の分解方法

(1) ピック・アップ・ユニット（HD1101）を外した後で、2本のネジ ⑳ を外します。(16図参照)

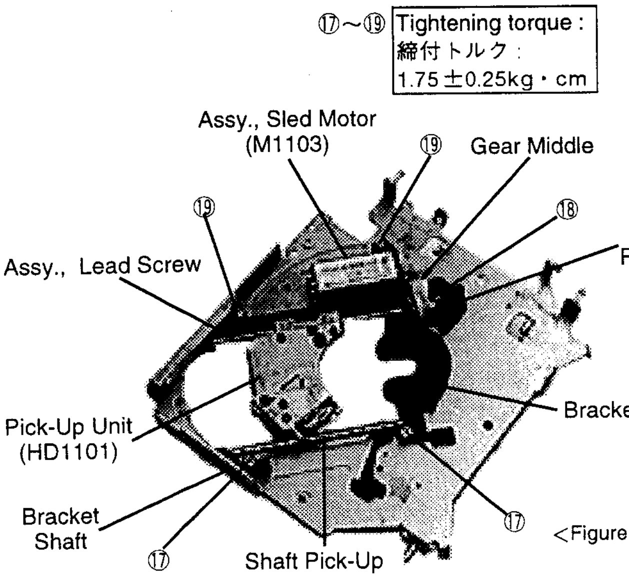
注意)

- ネジ ⑳ を外す時、ギア部分に傷をつけない様注意して下さい。

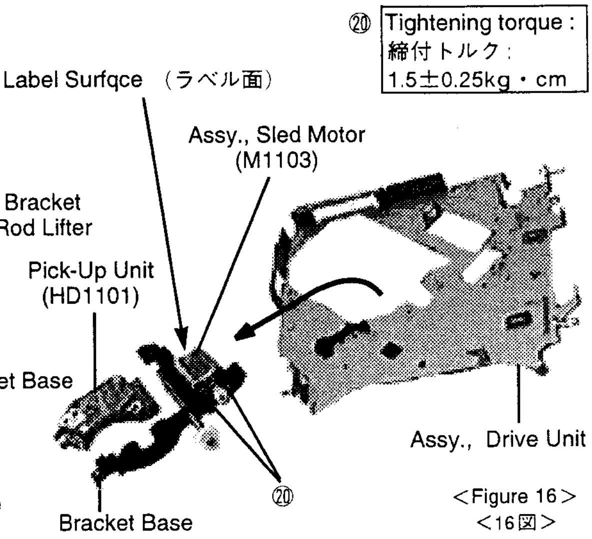
以上で、スレッド・モーター組立 (M1103)は外れます。(16図参照)

＜組立上の注意＞

- スレッド・モーター組立 (M1103)は、ラベル面の向きに注意して組み立てて下さい。(16図参照)
- スレッド・モーター組立 (M1103)を組み立てる時、ギア部分に傷をつけない様に注意して下さい。


⑰～⑲ Tightening torque :
締付トルク :
1.75±0.25kg・cm
Assy., Sled Motor (M1103)
⑲
Gear Middle
⑲
⑱
Bracket Rod Lifter
Assy., Lead Screw
Bracket Base
Pick-Up Unit (HD1101)
Bracket Shaft
⑰
Shaft Pick-Up
⑰

<Figure


⑳ Tightening torque :
締付トルク :
1.5±0.25kg・cm
Label Surfqce （ラベル面）
Assy., Sled Motor (M1103)
Pick-Up Unit (HD1101)
Assy., Drive Unit
⑳
Bracket Base

<Figure 16>
<16図>

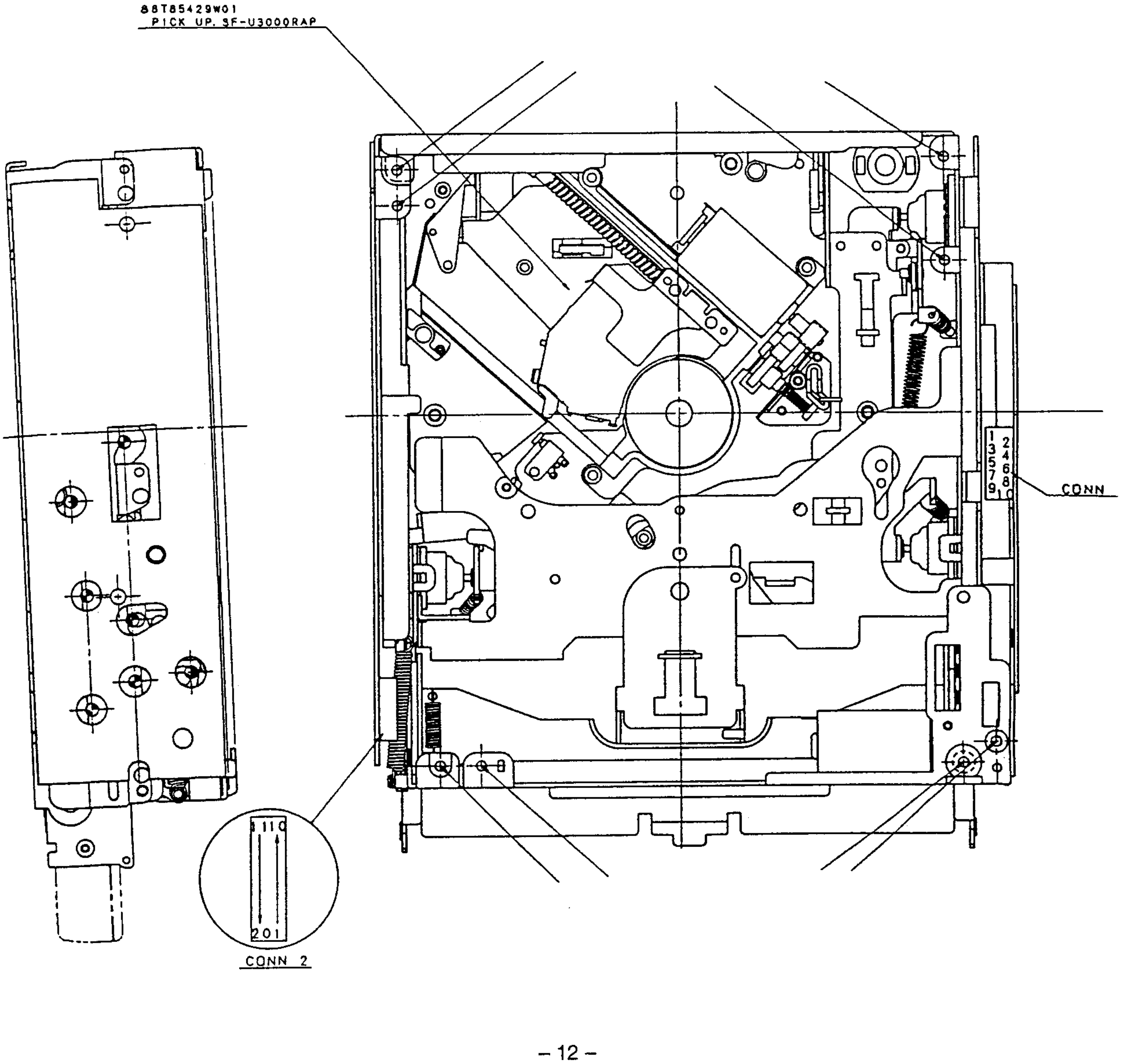
Mechanism Function Outline

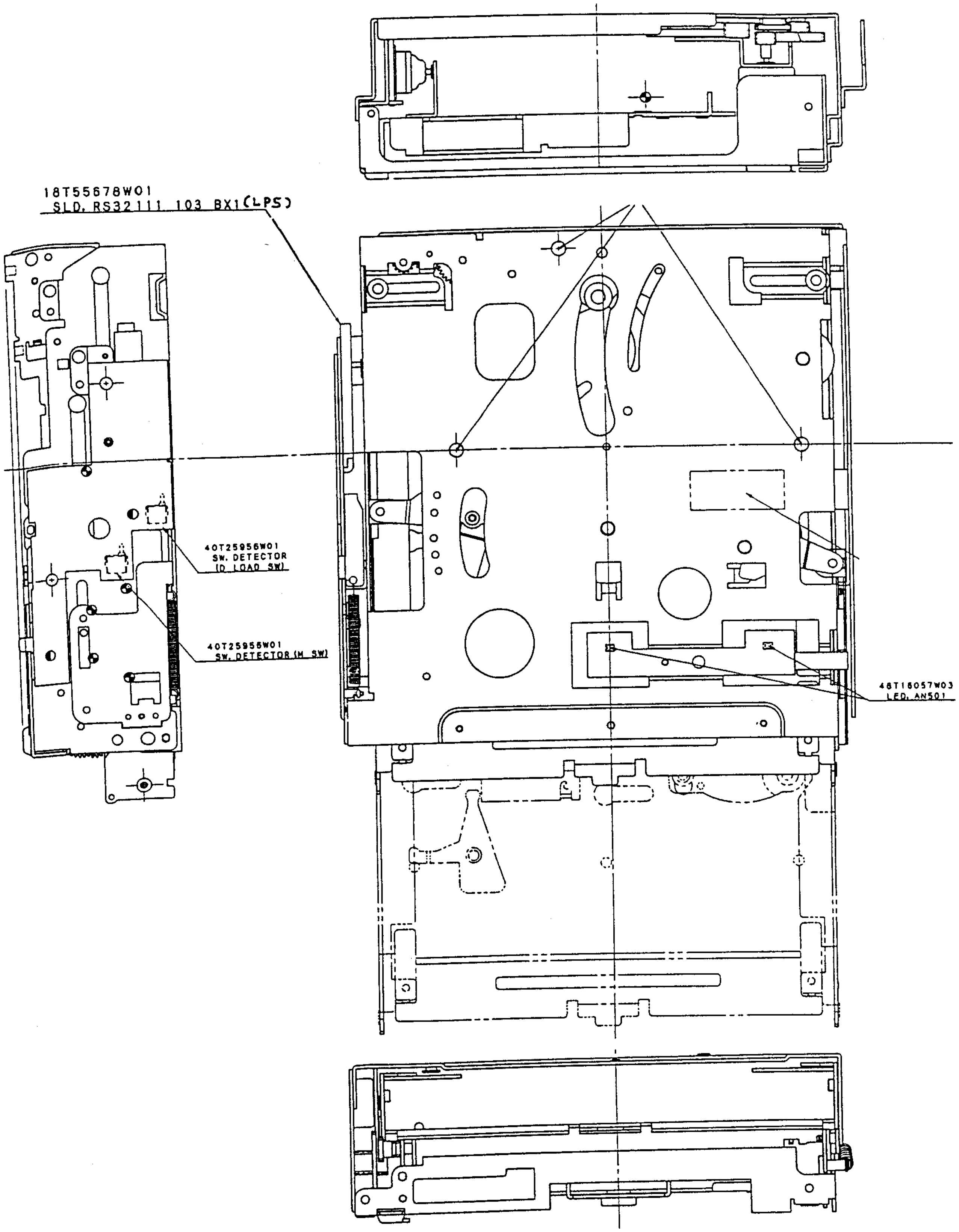
1. Outline

In-dash 3-CD changer is loaded on to this mechanism, which is improved in respect of the cost and function characteristics when compared with the old model.
This is a compact size that can incorporate a tuner too with the conventional size as it is.
The operation of DS24L010 is controlled by 2 motors, 2 detection switches and 1 Linear Position Sensor.

1. Speed-up when changing the disc.
2. Realization of lower cost.
3. Digital servo mechanism (improvement in characteristics).

1. The outline and names of respective components are shown in the figure below.



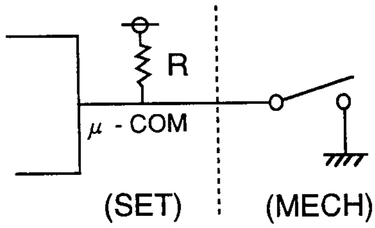
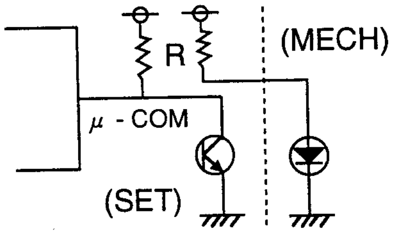

18T55678W01
SLD, RS32111 103 BX1(LPS)
40T25956W01
SW. DETECTOR
(D LOAD SW)
40T25956W01
SW. DETECTOR (M SW)
48T16057W03
LED, AN501

PIN No.	CONN 1	CONN 2
	FUNCTION	FUNCTION
1	GND	Rch OUT
2	M LOAD 1	S GND
3	5V (L CONT)	Lch OUT
4	M LOAD 2	AUDIO +B
5	LPS	GND
6	D LOAD 1	7V (L CONT)
7	D LOAD SW	GND
8	D LOAD 2	GND
9	M SW	7V (V CONT)
10	NC	7V (V CONT)
11		/ LOCK
12		/ CCE
13		BUCK
14		BUS3
15		BUS2
16		BUS1
17		BUS0
18		D-OUT
19		LSI-RST
20		LMT-SW

2. Names and Functions of Sensors

NO.	NAME	FUNCTIONS
1	MAGAZINE TRAY MOTOR (M LOAD 1/2)	The elevator operation for travelling the loading mechanism is performed by turning it in normal and reverse directions. This is the motor of selecting the disc and performing the eject operation.
2	LOAD MOTOR (D LOAD1/2)	This motor drives the roller mechanism. The roller mechanism unloads the disc in addition to loading the disc to the drive unit from the magazine.
3	MAGAZINE SW (M SW)	The switch for detecting if the magazine is inserted or not. Low: for the presence of magazine. High: for the absence of magazine.
4	LOAD SW (D LOAD SW)	The switch for detecting if the disc is entered into the specified place or not, and if the disc has been sent to the drive unit or not. The detection by High —> Low. (Up-edge detection).
5	PHOTO 1 and 2	The switch for detecting the presence/absence of disc when the disc is loaded to the drive unit from the magazine and when the disc is unloaded.

3. Sensors Specification

NO.	NAME	SPEC	REMARKS
1	MAGAZINE TRAY MOTOR (M LOAD 1/2)	Motor used Voltage Range 2.6V~7.0V Rating 7.0V	Normal current; 370mA Max Starting current; 930mA Max
2	LOAD MOTOR (D LOAD 1/2)	Motor used Voltage Range 2.6V~7.0V Rating 7.0V	Normal current; 370mA Max Starting current; 930mA Max
3	MAGAZINE SW (M SW)	The circuit is shown below. 	The pull up resistor on the set side is 33Kohm ~ 47Kohm.
4	LOAD SW (D LOAD SW)		
5	PHOTO 1	The circuit is shown below. 	————
6	PHOTO 2		
7	LINEAR POSITION SENSOR (LPS)	Rate Voltage: MAX 5V	————

New Technology

1. Mechanism

LPS (Liner Position Sensor)

LPS mechanism position detection (Home , Elevator , Eject)

The DS-L (DS24L010) uses the LPS sensor, and three positions, namely the disc elevator position, mechanism home position and eject positions are detected respectively.

POSITION		RESISTANCE(%)	HEX code	VOLTAGE (at5V,Zin=∞)
EJECT	MAX	3.100	08	
	STD	5.100	0D	0.255
	MINI	7.000	12	
HOME POSITION	MAX	23.000	3B	
	STD	25.000	40	1.25
	MINI	27.000	45	
DISC 1	MAX	52.300	81	
	STD	54.300	86	2.62
	MINI	56.300	8B	
DISC 2	MAX	71.100	B2	
	STD	73.000	B7	3.58
	MINI	75.000	BC	
DISC 3	MAX	89.800	E2	
	STD	91.800	E7	4.62
	MINI	93.800	EC	

NOTE : The LPS HEX code should exist between MAX and MINI in the respective positions.

Basic Operation and Timing Chart of DS-L Mechanism

There are 10 kinds of timing to the DS-L, and all the modes are controlled by that combination.

1) When the LPS value specified in the timing chart should be detected, the magazine tray comes to a stop, and the LPS value is rechecked. If the value iswithin the specified range, the operation proceeds to the next step. If the valueshould be outside the specified range, the position is recorrected after the wait for 100ms.

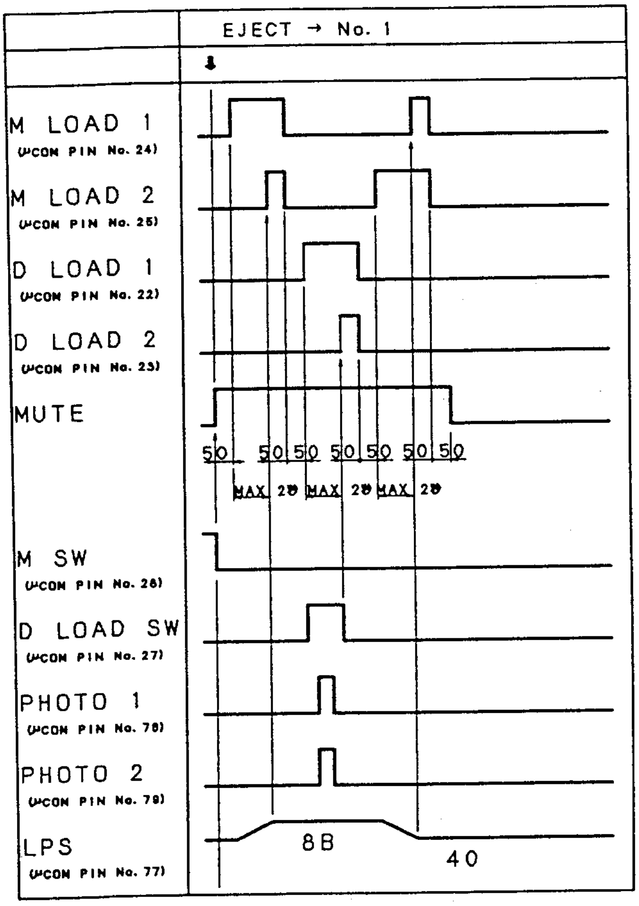
2) The H —> L of PHOTO 1 and 2 is detected while the D LOAD switch is in Land moreover if the H —>L of D LOAD switch should be detected, it is so judged that the disc is normally loading or unloading, and the operation proceeds to the next step. (After the end of detection, the present disc # is rewritten).

1. Basic Operation and Timing

Ⅰ. Play operation <Eject —> PLAY disc #1>

1. Magazine insertion :
   Insert the magazine into the DS-L mechanism.
2. Magazine lock :
   The magazine is locked to the DS-L mechanism, and the magazine switch is turned on. (IC601 pin #28 Low).
3. Disc #1 selection :
   The disc #1 is selected with the source switch.
4. Tray magazine discharge :
   The main control IC (IC601) pin #24 outputs 5V to the IC702 motor drive IC, and 7V is supplied to the magazine tray motor (tray motor FWD side - red wire) from IC702 pin #5, and the magazine tray is moved until the LPS HEX value becomes 86 disc #1 position.
5. Tray magazine stop :
   When 7V is supplied to the magazine tray motor (traymotor BWD side - black wire) from IC702 pin #3 and the LPS HEX value reaches 86, then the magazine tray stops.

6. Disc loading :
   After the WAIT for 50ms, the main control IC (IC601) pin #22 outputs 5V to the IC702 motor drive IC, 7V is supplied to the load motor (load motor FWD side) from IC702 pin #10, and the disc is moved to the mechanism from the magazine.
   If the disc is pressed with the push lever, the disc is moved to the mechanism by the disc roller.
7. Disc loading status check :
   The status for the disc to move to the mechanism is checked by two photo sensors (PT701, PT702).
   The voltages of IC601 #76 and #79 are controlled by both the photo sensors and change to Low —> High—> Low.
   This means that the disc loading has been completed.
8. Tray magazine importation :
   After the voltages of IC601 pin #76 and pin #79 are controlled by both the photo sensors and change to Low—> High Low and the load switch is turned on (IC601 pin #27), IC601 pin #23 (tray BWD) outputs 5V, 7V is supplied to the magazine tray motor (tray motor BWD side -black wire) from IC702 pin #3, which returns the magazine tray to its original position, and the disc is chucked until the LPS HEX value becomes the 40 home position.


EJECT → No. 1
M LOAD 1
(μCON PIN No. 24)
M LOAD 2
(μCON PIN No. 25)
D LOAD 1
(μCON PIN No. 22)
D LOAD 2
(μCON PIN No. 23)
MUTE
50
50
50
50
50
50
50
MAX 2S
MAX 2S
MAX 2S
M SW
(μCON PIN No. 28)
D LOAD SW
(μCON PIN No. 27)
PHOTO 1
(μCON PIN No. 78)
PHOTO 2
(μCON PIN No. 79)
LPS
(μCON PIN No. 77)
8B
40

II. Disc Change <Disc #1 —> Disc #2>

1. Disc selection :
   The disc #2 shall be selected with the disc selection switch.
2. Tray magazine discharge :
   The main control IC (IC601) pin #24 outputs 5V to the IC702 motor drive IC, 7V is supplied to the magazine tray motor (tray motor FWD side - red wire) from IC702 pin #5 and the magazine tray is moved until the LPS HEX value reaches the 86 disc #1 position.
3. Tray magazine stop :
   When 7V is supplied to the magazine tray motor (tray motor BWD side - black wire) from IC702 pin #3 and the LPS HEX value reaches 86, then the magazine tray stops.
4. Disc #1 unloading :
   After the WAIT of 50ms, the main control IC (IC601) pin #23 outputs 5V to the IC702 motor drive IC, 7V is supplied to the load motor (load motor BWD side) from IC702 pin #12, and the disc is returned to the magazine from the mechanism.
5. Disc unloading status check :
   The status for the disc to return to the mechanism is checked by two photo sensors (PT701, PT702).
   The voltages of IC601 pin #76 and #79 are controlled by both the photo sensors, and change to High —> Low.
   This means that the disc unloading is completed.
6. Disc loading motor stop :
   After the voltages of IC601 pin #76 and #79 are controlled by both the photo sensors and change to High —> Low and the load switch (IC601 pin #27) becomes High —> Low, IC601 #22 (load FWD) outputs 5V, 7V is supplied from IC702 pin #10, and the disc load motor stops (load motor FWD side).
7. Disc position, up to disc #2 :
   The main control IC (IC601) pin #24 outputs 5V to the IC702 motor drive IC, 7V is supplied to the magazine tray motor (tray motor FWD side - red wire) from IC702 pin #5 and the magazine tray shall be moved until the LPS HEX value reaches the 86 disc #2 position.
8. Tray magazine stop :
   When the 7V is supplied to the magazine tray motor (tray motor BWD side - black wire) from IC702 pin #3 and the LPS HEX value becomes 86, then the magazine tray stops.
9. Disc #2 loading :
   After the WAIT for 50ms, the main control IC (IC601) pin #22 outputs 5V to the IC702 motor drive IC, 7V is supplied to the load motor (load motor FWD side) from IC702 pin #10, and the disc is moved to the mechanism from the magazine.
   Press the disc with the push lever, then the disc is moved to the mechanism by the disc roller.

10. Disc loading status check :

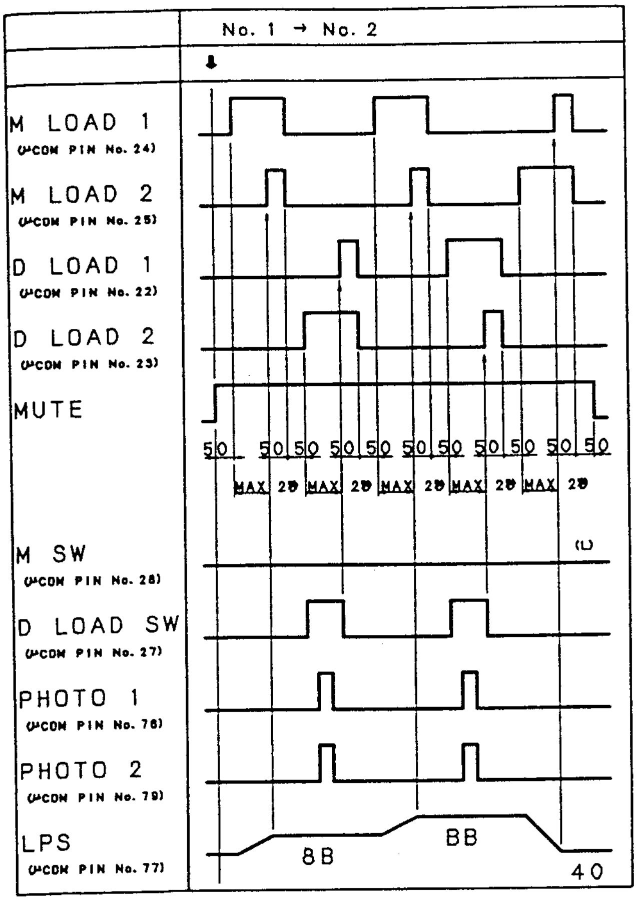
The status for the disc to move to the mechanism is checked by two photo sensors (PT701, PT702).

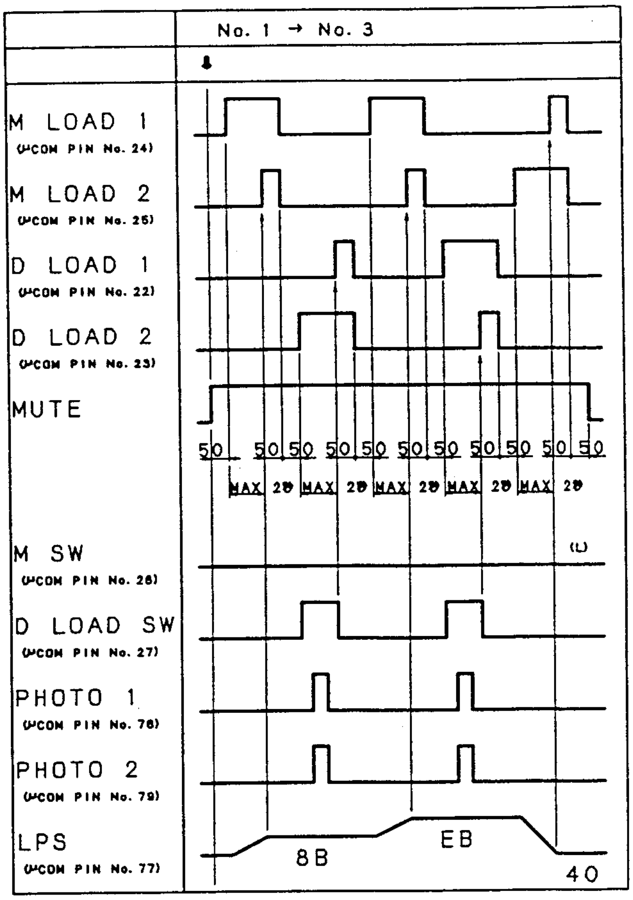
The voltages of IC601 pin #76 and #79 are controlled by both the photo sensors and change to Low —> High —> Low.

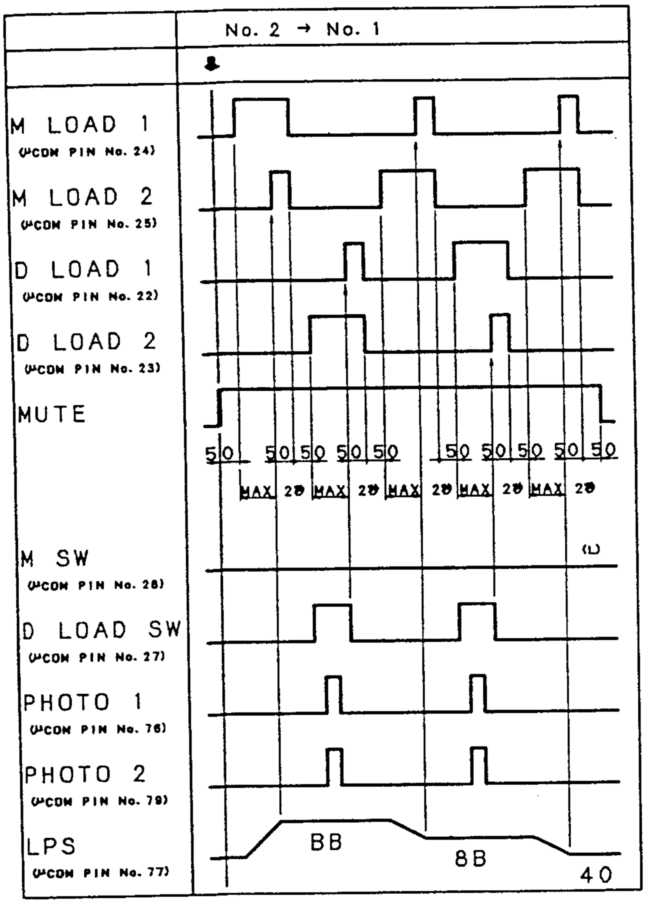
This means that the disc loading has been completed.

11. Tray magazine importation :

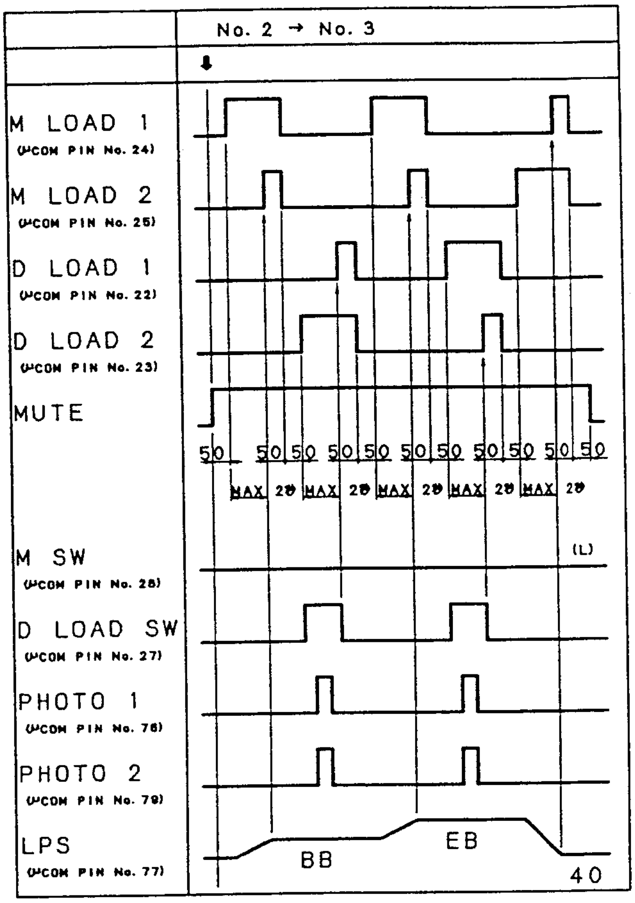
After the voltages of IC601 pin #76 and #79 are controlled by both the photo sensors and change to Low —> High —> Low and the load switch (IC601 pin #27) is turned on, IC601 pin #25 (tray BWD) outputs 5V, 7V is supplied to the magazine tray motor (tray motor BWD side -black wire) from IC702 pin #3, which returns the magazine tray to its original position, and the disc is chucked until the LPS HEX value reaches the 40 home position.


No. 1 → No. 2
M LOAD 1
(μCOM PIN No. 24)
M LOAD 2
(μCOM PIN No. 25)
D LOAD 1
(μCOM PIN No. 22)
D LOAD 2
(μCOM PIN No. 23)
MUTE
50 50 50 50 50 50 50 50 50 50 50
MAX 20 MAX 20 MAX 20 MAX 20 MAX 20
M SW
(μCOM PIN No. 28)
(L)
D LOAD SW
(μCOM PIN No. 27)
PHOTO 1
(μCOM PIN No. 76)
PHOTO 2
(μCOM PIN No. 79)
LPS
(μCOM PIN No. 77)
8B
BB
40

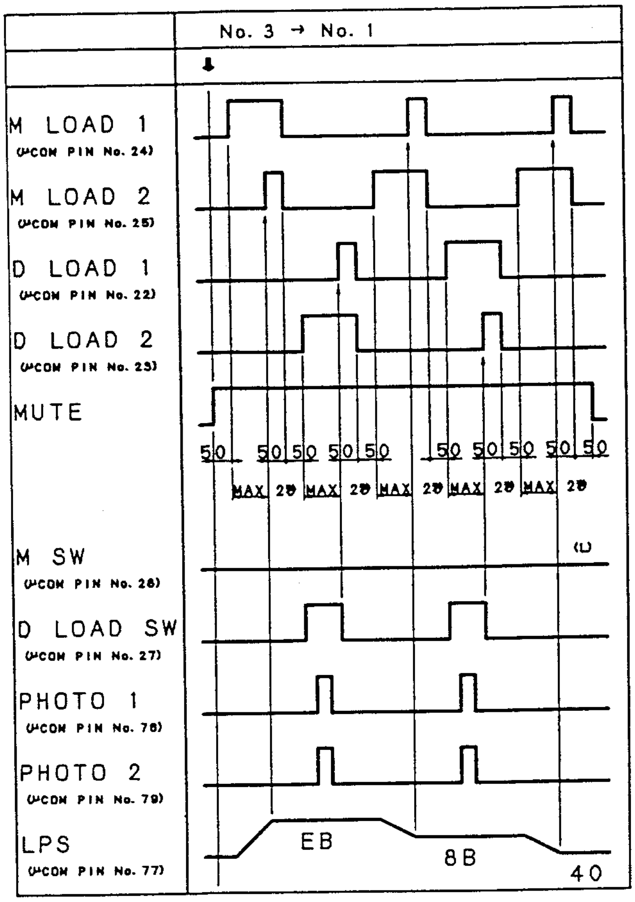

No. 1 → No. 3
M LOAD 1
(μCOM PIN No. 24)
M LOAD 2
(μCOM PIN No. 25)
D LOAD 1
(μCOM PIN No. 22)
D LOAD 2
(μCOM PIN No. 23)
MUTE
50 50 50 50 50 50 50 50 50 50 50
MAX 20 MAX 20 MAX 20 MAX 20 MAX 20
M SW
(μCOM PIN No. 28)
(L)
D LOAD SW
(μCOM PIN No. 27)
PHOTO 1
(μCOM PIN No. 76)
PHOTO 2
(μCOM PIN No. 79)
LPS
(μCOM PIN No. 77)
8B
EB
40


No. 2 → No. 1

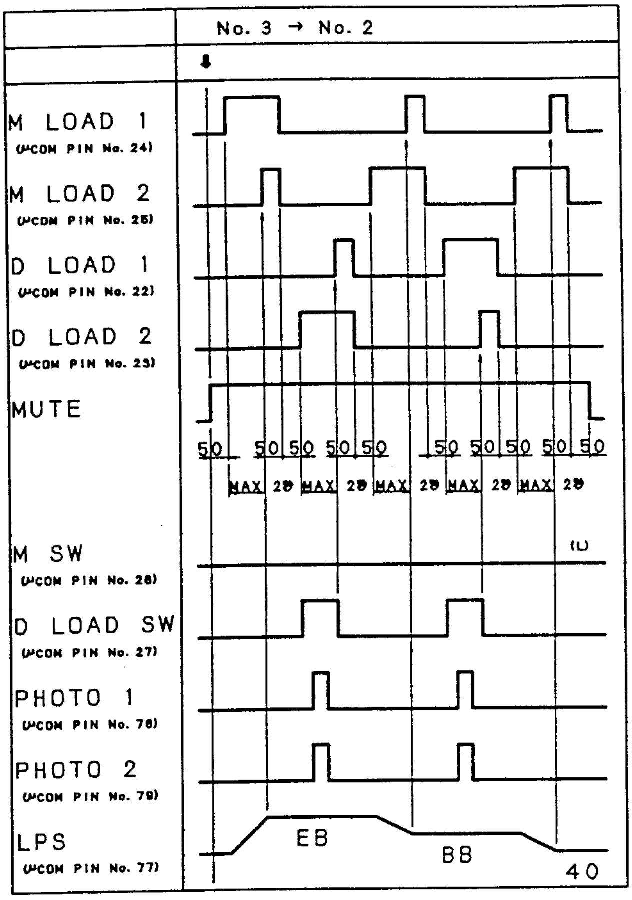
M LOAD 1
(μCOM PIN No. 24)
M LOAD 2
(μCOM PIN No. 25)
D LOAD 1
(μCOM PIN No. 22)
D LOAD 2
(μCOM PIN No. 23)
MUTE
50 50 50 50 50 50 50 50 50 50
MAX 20 MAX 20 MAX 20 MAX 20 MAX 20
M SW
(μCOM PIN No. 28)
(L)
D LOAD SW
(μCOM PIN No. 27)
PHOTO 1
(μCOM PIN No. 76)
PHOTO 2
(μCOM PIN No. 79)
LPS
(μCOM PIN No. 77)
BB
8B
40


No. 2 → No. 3

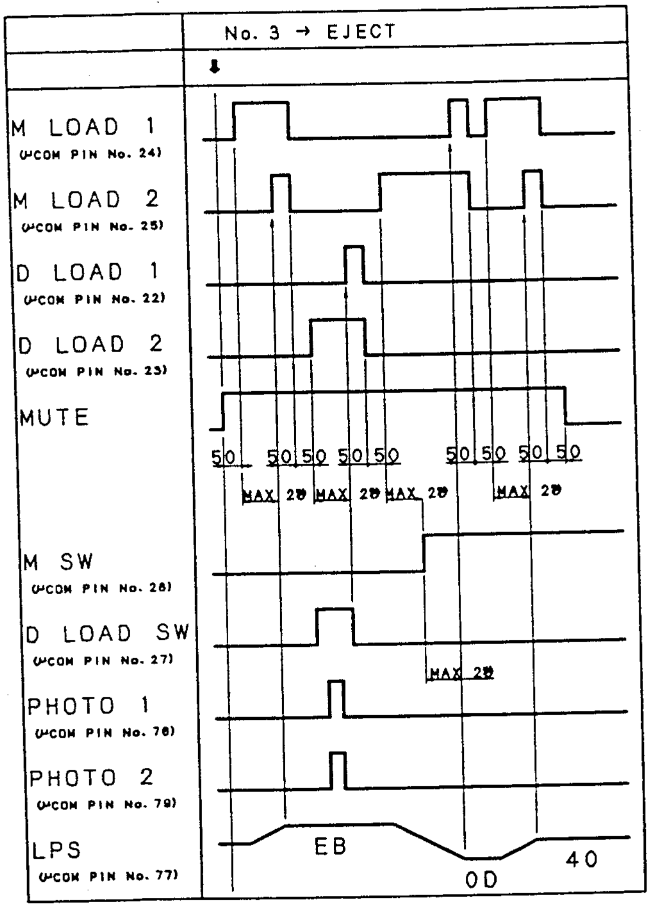
M LOAD 1
(μCOM PIN No. 24)
M LOAD 2
(μCOM PIN No. 25)
D LOAD 1
(μCOM PIN No. 22)
D LOAD 2
(μCOM PIN No. 23)
MUTE
50 50 50 50 50 50 50 50 50 50
MAX 20 MAX 20 MAX 20 MAX 20 MAX 20
M SW
(μCOM PIN No. 28)
(L)
D LOAD SW
(μCOM PIN No. 27)
PHOTO 1
(μCOM PIN No. 76)
PHOTO 2
(μCOM PIN No. 79)
LPS
(μCOM PIN No. 77)
BB
EB
40


No. 3 → No. 1

M LOAD 1
(μCOM PIN No. 24)
M LOAD 2
(μCOM PIN No. 25)
D LOAD 1
(μCOM PIN No. 22)
D LOAD 2
(μCOM PIN No. 23)
MUTE
50 50 50 50 50 50 50 50 50 50
MAX 20 MAX 20 MAX 20 MAX 20 MAX 20
M SW
(μCOM PIN No. 28)
(L)
D LOAD SW
(μCOM PIN No. 27)
PHOTO 1
(μCOM PIN No. 76)
PHOTO 2
(μCOM PIN No. 79)
LPS
(μCOM PIN No. 77)
EB
8B
40


No. 3 → No. 2

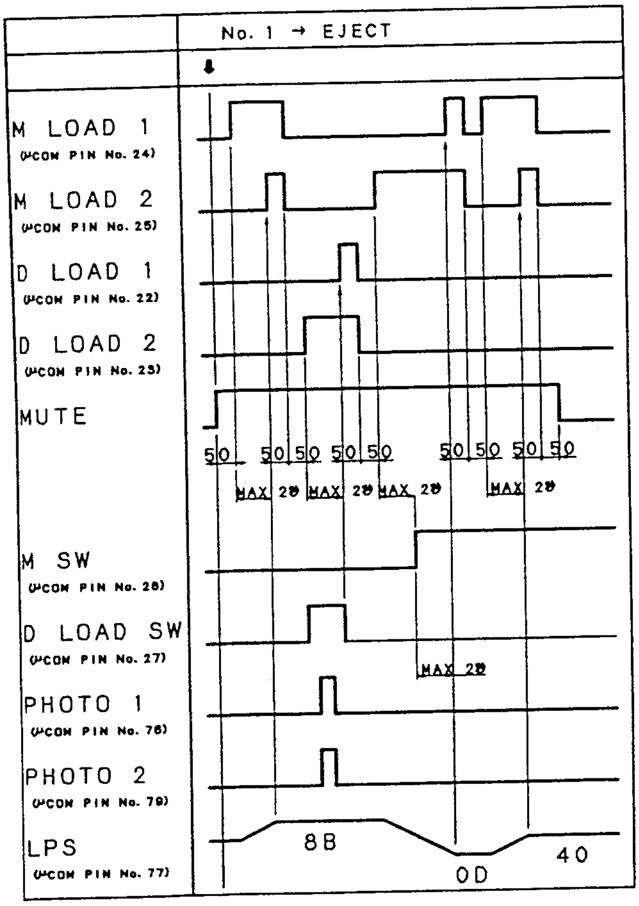
M LOAD 1
(μCOM PIN No. 24)
M LOAD 2
(μCOM PIN No. 25)
D LOAD 1
(μCOM PIN No. 22)
D LOAD 2
(μCOM PIN No. 23)
MUTE
50 50 50 50 50 50 50 50 50 50
MAX 20 MAX 20 MAX 20 MAX 20 MAX 20
M SW
(μCOM PIN No. 28)
(L)
D LOAD SW
(μCOM PIN No. 27)
PHOTO 1
(μCOM PIN No. 76)
PHOTO 2
(μCOM PIN No. 79)
LPS
(μCOM PIN No. 77)
EB
BB
40

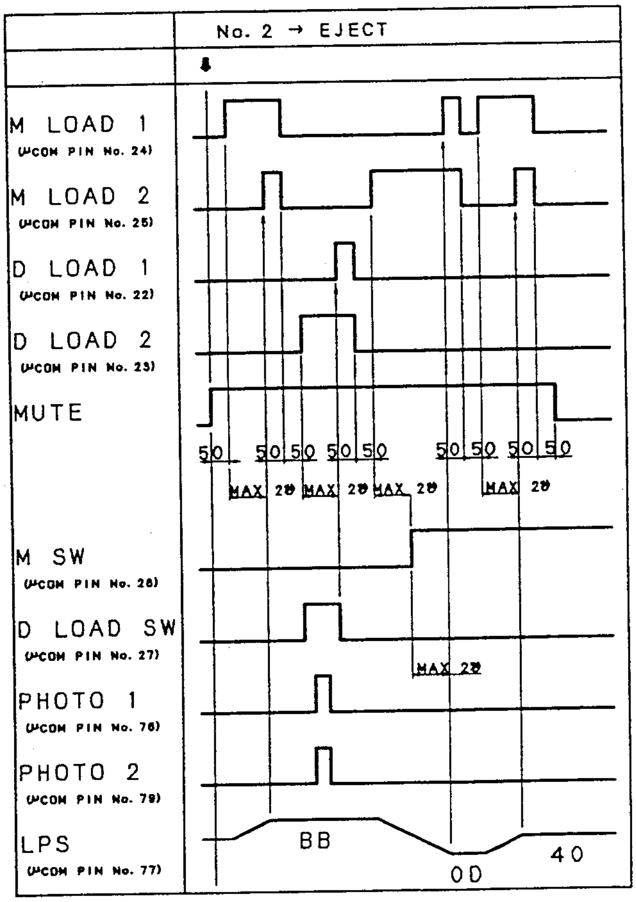

No. 3 → EJECT
M LOAD 1
(μCOM PIN No. 24)
M LOAD 2
(μCOM PIN No. 25)
D LOAD 1
(μCOM PIN No. 22)
D LOAD 2
(μCOM PIN No. 23)
MUTE
50
50
50
50
50
50
50
50
50
50
MAX 2S
MAX 2S
MAX 2S
MAX 2S
M SW
(μCOM PIN No. 28)
D LOAD SW
(μCOM PIN No. 27)
MAX 2S
PHOTO 1
(μCOM PIN No. 78)
PHOTO 2
(μCOM PIN No. 79)
LPS
(μCOM PIN No. 77)
EB
OD
40

III. Eject Operation <Disc #1 —> Eject>

1. Eject switch ON :
   Press the eject switch.
2. Magazine tray movement :
   The main control IC (IC601) pin #24 outputs 5V to the IC702 motor drive IC, 7V is supplied to the magazine tray motor (tray motor FWD side - red wire) from IC702 pin #5, and the magazine tray is moved until the LPS HEX value reaches the 86 disc #1 position.
3. Magazine tray stop :
   When 7V is supplied to the magazine tray motor (tray motor BWD side - black wire) from IC702 pin #3 and the LPS HEX value becomes 86, then the magazine tray stops.
4. Disc unloading :
   After the WAIT for 50ms, the main control IC (IC601) pin #23 outputs 5V to the IC702 motor drive IC, 7V is supplied to the load motor (load motor BWD side) from IC702 pin #10 and the disc is returned to the magazine from the mechanism.

5. Disc unloading status :
The status for the disc to return to the mechanism is checked by two photo sensors (PT701, PT702).
The voltages of IC601 pin #76 and pin #79 are controlled by both the photo sensors and change to High —> Low.
This means that the disc unloading is completed.
6. Disc loading motor stop :
After the voltages of IC601 pin #76 and #79 are controlled by both the photo sensors, change to High —> Low and the load switch becomes High —> Low, IC601 pin #22 (load FWD) outputs 5V, 7V is supplied from IC702 pin #12, and then the disc load motor stops (load motor FWD side).
7. Magazine eject :
The main control IC (IC601) pin #25 outputs 5V to IC702 motor drive IC, 7V is supplied to the magazine tray motor (tray motor BWD side - black wire) from the IC702 pin #3, the LPS HEX value becomes the 0D disc eject position and the magazine tray should be moved until the lock of magazine lock tray can be released.
8. Setting the tray to its home position :
The main control IC (IC601) pin #24 outputs 5V to the IC702 motor drive IC, 7V is supplied to the magazine tray motor (tray motor FWD side - red wire) from IC702 pin #5, and the magazine tray \ shall be moved until the LPS HEX value reaches the 40 home position.


No. 1 → EJECT
M LOAD 1
(μCOM PIN No. 24)
M LOAD 2
(μCOM PIN No. 25)
D LOAD 1
(μCOM PIN No. 22)
D LOAD 2
(μCOM PIN No. 23)
MUTE
50 50 50 50 50 50 50 50 50
MAX 20 MAX 20 MAX 20 MAX 20
M SW
(μCOM PIN No. 28)
D LOAD SW
(μCOM PIN No. 27)
MAX 20
PHOTO 1
(μCOM PIN No. 76)
PHOTO 2
(μCOM PIN No. 79)
LPS
(μCOM PIN No. 77)
8B
0D
40


No. 2 → EJECT
M LOAD 1
(μCOM PIN No. 24)
M LOAD 2
(μCOM PIN No. 25)
D LOAD 1
(μCOM PIN No. 22)
D LOAD 2
(μCOM PIN No. 23)
MUTE
50 50 50 50 50 50 50 50 50
MAX 20 MAX 20 MAX 20 MAX 20
M SW
(μCOM PIN No. 28)
D LOAD SW
(μCOM PIN No. 27)
MAX 20
PHOTO 1
(μCOM PIN No. 76)
PHOTO 2
(μCOM PIN No. 79)
LPS
(μCOM PIN No. 77)
BB
0D
40

2. Elimination of Switch Chattering

Name of SW	Time of Interf.	How to determine
M SW	10 ms	Coincidence twice
D LOAD SW	Ditto	Ditto
PHOTO 1	Ditto	Ditto
PHOTO 2	Ditto	Ditto
LPS	1 ms	Coincidence once

3. Error Operation

I. LPS Abnormality

When the LPS doesn't move to the regular position, the error code (ERROR) is displayed and the timing chart executes nothing any longer. The unit should stop and should accept only the eject.

II. Disc Loading/Unloading Abnormalities

If an error should occur with the first disc detection during the replacement of disc (during the execution of timing chart), the same operation is executed again after the detection of UP EDGE for 100ms.

If the normal operation is unavailable even after that, the error code (ERROR) will be displayed, and the unit stops. (The disc changing key and eject must be accepted).

III. Disposal of ERROR

HOW TO DEAL WITH ERRORS

	1	2	3	4	5	STEP
1	A	B	A	C	D	
2	A	B	A	C	D	
3	A	B	D	C	D	
4	A	B	A	C	D	
5	A	B	D	C	D	
6	A	B	D	C	D	
7	A	B	E	D	A	
8	A	B	E	D	A	
9	A	B	E	D	A	
10	A	B	D	-	-	
Timing						

IV. Cause for Failures

	Cause for failures	Contents of disposal
A	LPS failure	Try again after inputting the EJECT KEY.
B	Failure when returning the disc into the magazine	Apply the reverse rotation again, and try again after detecting the D LOAD switch.
C	Failure when ejecting the disc	When the inputs of PHOTO 1 and PHOTO 2 can not be detected, the reverse rotation should be applied, and after detecting the D LOAD switch, shift to the next disc. When any of these PHOTOS can be detected, the reverse rotation should be applied, and try again after detecting the D LOAD switch.
D	LPS failure	Try again after inputting the EJECT KEY.
E	LPS failure	Try again after 100msec, and when the LPS is lower than 13, it should be so judged that the EJECT has been completed.

4. Operation during ACC OFF

Disposal of ACC OFF

If the ACC is turned off during the mode conversion, enter into the STAND BY MODE after the timing chart now under execution has been completed.

5. Forced STAND BY operation

Forced STAND BY

If the B-HOLD should be detected during the mode conversion, the timing chart execution should be promptly interrupted, and shifted to the STAND BY MODE.
Further, when restored, the step which has been executed before the coercive STAND BY should be executed again.

6. Initialize Operation

M SW	D LOAD SW	PHOTO 1	PHOTO 2	State of Mech.	Next behavior
L	H	L	L	No magazine	Waiting for insertion
		H	L	Foreign matter (including wrong disc) is inserted.	Display of E-01
		L	H		
		H	H		
H	H	L	L	Disc chucking (only by magazine insertion)	PLAY
Not fixed	L	L	H	Disc is being	Chucking
		H	L	The positional correction disposal should be made depending on the cases.	
		H	H		
		L	L		
	Others			ERROR	Display of Error

Remarks :
Read the value of LPS before shifting to the PLAY operation, and if the value isn 't within the range, the position correction disposal must be done. (For the disposal, see the attached sheet).
After that, read the TOC and make the PAUSE to be stand-by.
However, if the TOC can not be read, the disc is not chucked in some cases. In this case, shift to the disc ejectoperation, and after the end of mode, execute the timing chart and load NO. 1 disc.
Further, if the High —>Low of PHOTO 1 and 2 should be detected during the disc eject, it should be so understood that the disc which can not be read by the TOC has been entered, then deduce the current disc position from the value of LPS at that time, and load the next disc.

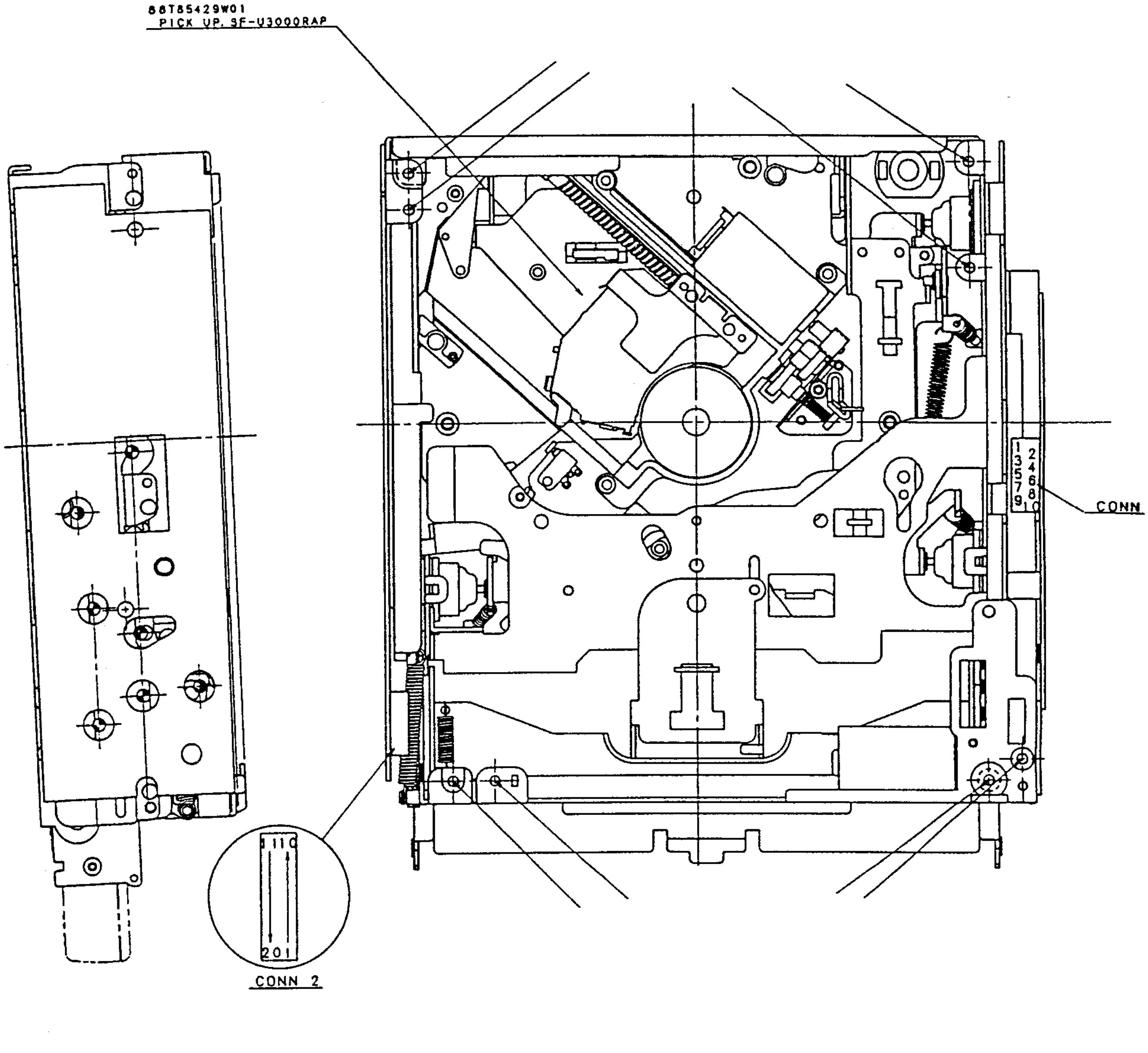
機能概要

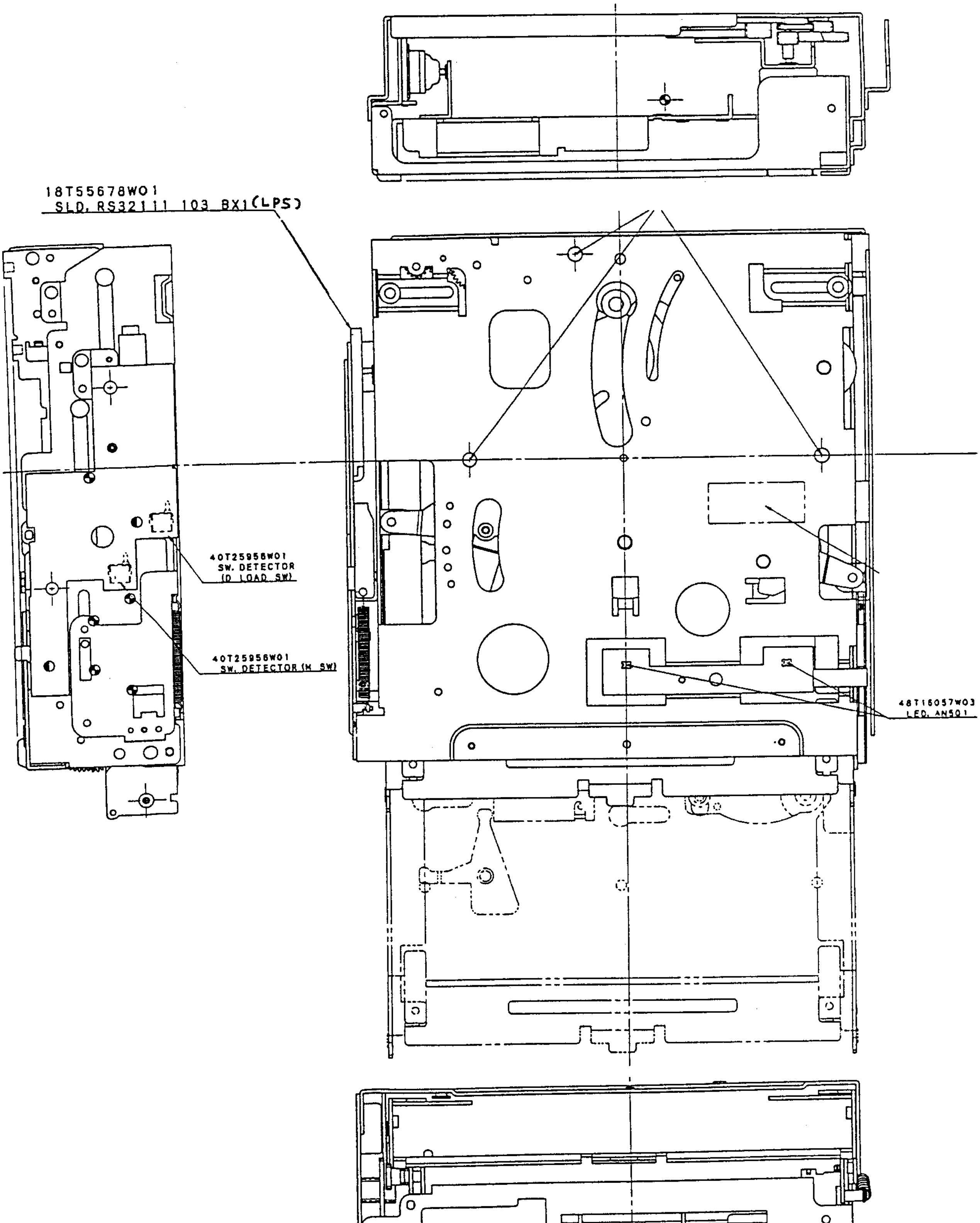
1. 概要

このメカニズムにはインダッシュ3枚CDチェンジャーが搭載され、旧モデルと比較すると、コストと機能特性の点で改善されている。従来サイズのままでチューナーも内蔵できるコンパクトサイズとなっている。DS24L010の動作は、2モーター、2検出SW、1リニア ポジション センサーによって制御されている。

1. ディスク交換時のスピードアップ
2. ローコスト化
3. ディジタル サーボ メカ（特性改善）

1. 各部の概略および名称を下図に示す。


66T85429W01
PICK UP, SF-U3000RAP
CONN
1 3 5 7 9
2 4 6 8 10
CONN 2
1 11
20 1

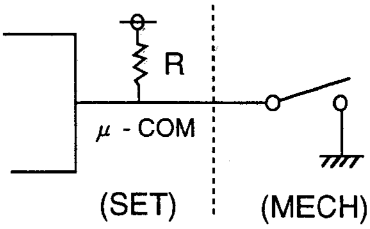
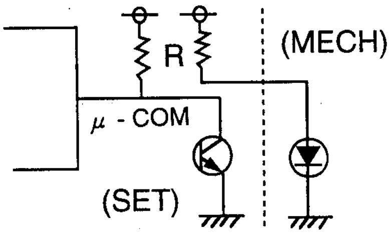

18T55678W01
SLD, RS32111 103 BX1(LPS)
40T25956W01
SW. DETECTOR
(D LOAD SW)
40T25956W01
SW. DETECTOR (H SW)
48T16057W03
LED, AN501

PIN No.	CONN 1	CONN 2
	端子名称	端子名称
1	GND	Rch OUT
2	M LOAD 1	S GND
3	5V (L CONT)	Lch OUT
4	M LOAD 2	AUDIO +B
5	LPS	GND
6	D LOAD 1	7V (L CONT)
7	D LOAD SW	GND
8	D LOAD 2	GND
9	M SW	7V (V CONT)
10	NC	7V (V CONT)
11		/ LOCK
12		/ CCE
13		BUCK
14		BUS3
15		BUS2
16		BUS1
17		BUS0
18		D-OUT
19		LSI-RST
20		LMT-SW

2. 各部の名称および機能説明

NO.	名称	機能説明
1	MAGAZINE TRAY MOTOR (M LOAD 1/2)	正転／逆転することで、ローディング機構を上下させるエレベーターの動作を行う。ディスクの選択およびイジェクト動作を行うためのモーターである。
2	LOAD MOTOR (D LOAD 1/2)	このモーターはローラー メカニズムを駆動する。ローラー メカニズムはディスクをマガジンからドライブユニットへロードするだけでなく、ディスクをアンロードもする。
3	MAGAZINE SW (M SW)	マガジンが挿入されているかどうかを検出するSW。 マガジン有り：Low マガジン無し：High
4	LOAD SW (D LOAD SW)	ディスクがマガジンの定位置に入っているかどうか、およびディスクがドライブユニットに送られているかどうかを検出するSW。 High→Lowにて検出（アップエッジ検出）
5	PHOTO1 and 2	ディスクがマガジンからドライブユニットにロードされるとき、およびアンロードされるときのディスクの有無を検出するSW。

3. 各部の端子処理

NO.	名称	SPEC	備考
1	MAGAZINE TRAY MOTOR (M LOAD 1/2)	使用モーター 使用電圧範囲 ： 2.6V～7.0V 定格： 7.0V	通常電流 370mA 以下 起動電流 930mA 以下
2	LOAD MOTOR (D LOAD1/2)	使用モーター 使用電圧範囲： 2.6V～7.0V 定格： 7.0V	通常電流 370mA 以下 起動電流 930mA 以下
3	MAGAZINE SW (M SW)	回路は以下の通り  	セット側PULL-UP抵抗は、33KΩ～47KΩ。
4	LOAD SW (D LOAD SW)		
5	PHOTO 1	回路は以下の通り  	—
6	PHOTO 2		
7	LINEAR POSITION SENSOR (LPS)	定格電圧： MAX 5V	—

新技術メカニズム

LPS (リニア ポジション センサー)

LPSメカニズム ポジション検出 (ホーム、エレベーター、イジェクト)

DS-L(DS24L010)は、LPSセンサーを使用しており、ディスクエレベーターポジション、メカホームポジション、およびイジェクトポジションの3つの各々が検出される。

ポジション		抵抗比(%)	HEX コード	電圧(at5V,Zin=∞)
EJECT	上限	3.100	08	
	センター	5.100	0D	0.255
	下限	7.000	12	
ホーム ポジション	上限	23.000	3B	
	センター	25.000	40	1.25
	下限	27.000	45	
DISC 1	上限	52.300	81	
	センター	54.300	86	2.62
	下限	56.300	8B	
DISC 2	上限	71.100	B2	
	センター	73.000	B7	3.58
	下限	75.000	BC	
DISC 3	上限	89.800	E2	
	センター	91.800	E7	4.62
	下限	93.800	EC	

注意：それぞれのポジションにおいて、LPS HEXコードはMAXとMINIの間であること。

DS-Lメカニズムの基本動作とタイミングチャート

DS-Lには10種類のタイミングがあり、その組み合わせですべてのモードを制御する。

1) タイミングチャートで規定されているLPS値が検出されると、マガジン トレイ モーターが停止し、LPS値を再度チェックする。値が規定範囲内であれば、次の動作に進む。規定範囲外であれば、100msのWAIT後、ポジション修正が再度行われる。

2) D LOAD SWがLの間PHOTO 1と2のHigh→Lowが検出され、かつD LOAD SWのHigh→Lowが検出されると、ディスクは正常にローディングまたはアンローディングしていると判断され、次の動作に進む。(検出終了後、現在のディスク#は書き換えられる。)

1. 基本動作とタイミング

I. PLAY動作＜イジェクト→PLAYディスク#1＞

1.マガジン挿入：
マガジンをDS-Lメカに挿入する。

2.マガジン ロック：
DS-Lメカにマガジンがロックされ、マガジンSWはON。(IC601 ピン #28 Low)

3.ディスク#1選択：
ソースSWでディスク#1を選ぶ。

4.トレイ マガジン排出：
メインコントロールIC (IC601)ピン#24はIC702モータードライブICに5Vを出力し、IC702ピン#5からマガジン トレイ モーター（トレイモーターFWD側ー赤線）に7Vが供給され、LPS HEX値が86ディスク#1ポジションになるまでマガジントレイを動かす。

5.トレイ マガジン停止：
IC702ピン#3からマガジン トレイ モーター（トレイモーターBWD側ー黒線）に7Vが供給され、LPS HEX値が86になるとマガジントレイが停止する。

6.ディスク ローディング：

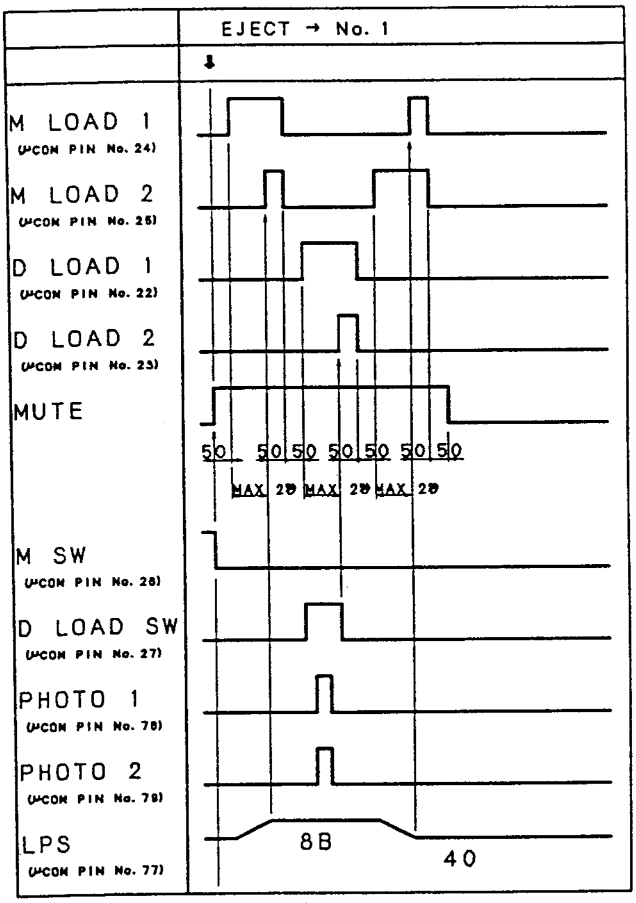
50msのWAIT後、メインコントロールIC（IC601）ピン#22はIC702モータードライブICに5Vを出力し、IC702ピン#10からロード モーター（ロード モーターFWD側）に7Vが供給され、ディスクをマガジンからメカへ動かす。プッシュレバーでディスクを押すと、ディスクはディスク ローラーによってメカへ動く。

7.ディスク ローディング状態チェック：

ディスクがメカへ動く状態は２つのフォトセンサー（PT701, PT702）によってチェックされる。IC601ピン#76とピン#79の電圧は、両方のフォトセンサーに制御されてLow→High→Lowに変わる。このことは、ディスクローディングが終了したことを意味する。

8.トレイ マガジン移入：

IC601ピン#76とピン#79の電圧が、両方のフォトセンサーに制御されてLow→High→Lowに変わり、ロードSWがON（IC601ピン#27）になった後、IC601ピン#23（トレイBWD）は5Vを出力し、IC702ピン#3からマガジントレイ モーター（トレイ モーターBWD側ー黒線）に7Vが供給され、マガジン トレイを元に戻し、LPS HEX値が40ホーム ポジションになるまでディスクがチャッキングされる。


EJECT → No. 1
M LOAD 1
(μCON PIN No. 24)
M LOAD 2
(μCON PIN No. 25)
D LOAD 1
(μCON PIN No. 22)
D LOAD 2
(μCON PIN No. 23)
MUTE
50
50
50
50
50
50
50
MAX 2S
MAX 2S
MAX 2S
M SW
(μCON PIN No. 28)
D LOAD SW
(μCON PIN No. 27)
PHOTO 1
(μCON PIN No. 78)
PHOTO 2
(μCON PIN No. 79)
LPS
(μCON PIN No. 77)
8B
40

II. ディスク交換（ディスク#1→ディスク#2）

1.ディスク選択：

ディスク選択SWでディスク#2を選ぶ。

2.トレイ マガジン排出：

メインコントロールIC (IC601)ピン#24はIC702モータードライブICに5Vを出力し、IC702ピン#5からマガジン トレイ モーター（トレイ モーターーFWD側ー赤線）に7Vが供給され、LPS HEX値が86ディスク#1ポジションになるまでマガジン トレイを動かす。

3.トレイ マガジン停止：

IC702ピン#3からマガジン トレイ モーター（トレイ モーターーBWD側ー黒線）に7Vが供給され、LPS HEX値が86になるとマガジン トレイが停止する。

4.ディスク#1アンローディング

50msのWAIT後、メインコントロールIC (IC601)ピン#23はIC702モータードライブICに5Vを出力し、IC702ピン#12からロード モーター（ロード モーターーBWD側）に7Vが供給され、ディスクをメカからマガジンへ戻す。

5.ディスク アンローディング状態チェック：

ディスクがメカへ戻る状態は2つのフォトセンサー（PT701, PT702）によってチェックされる。IC601ピン#76とピン#79の電圧は、両方のフォトセンサーに制御されてHigh→Lowに変わる。このことは、ディスク アンローディングが終了したことを意味する。

6.ディスク ローディング モーター停止：

IC601ピン#76とピン#79の電圧が、両方のフォトセンサーに制御されてHigh→Lowに変わり、ロードSW（IC601ピン#27）がHigh→Lowになった後、IC601ピン#22（ロードFWD）は5Vを出力し、IC702ピン#10から7Vが供給されディスク ロード モーターが停止する。（ロード モーターーFWD側）。

7.ディスク ポジション、ディスク#2まで：

メインコントロールIC (IC601)ピン#24はIC702モータードライブICに5Vを出力し、IC702ピン#5からマガジン トレイ モーター（トレイ モーターーFWD側ー赤線）に7Vが供給され、LPS HEX値が86ディスク#2ポジションになるまでマガジン トレイを動かす。

8.トレイ マガジン停止：

IC702ピン#3からマガジン トレイ モーター（トレイ モーターーBWD側ー黒線）に7Vが供給され、LPS HEX値が86になるとマガジン トレイが停止する。

9.ディスク#2ローディング：

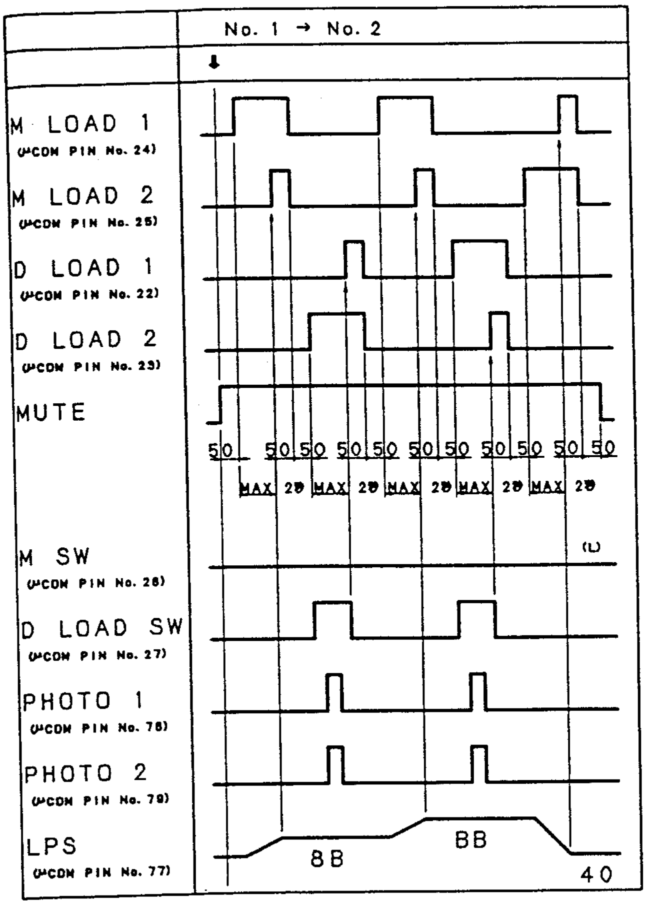
50ms待った後、メインコントロールIC (IC601)ピン#22はIC702モータードライブICに5Vを出力し、IC702ピン#10からロード モーター（ロード モーターーFWD側）に7Vが供給され、ディスクをマガジンからメカへ動かす。プッシュレバーでディスクを押すと、ディスクはディスク ローラーによってメカへ動く。

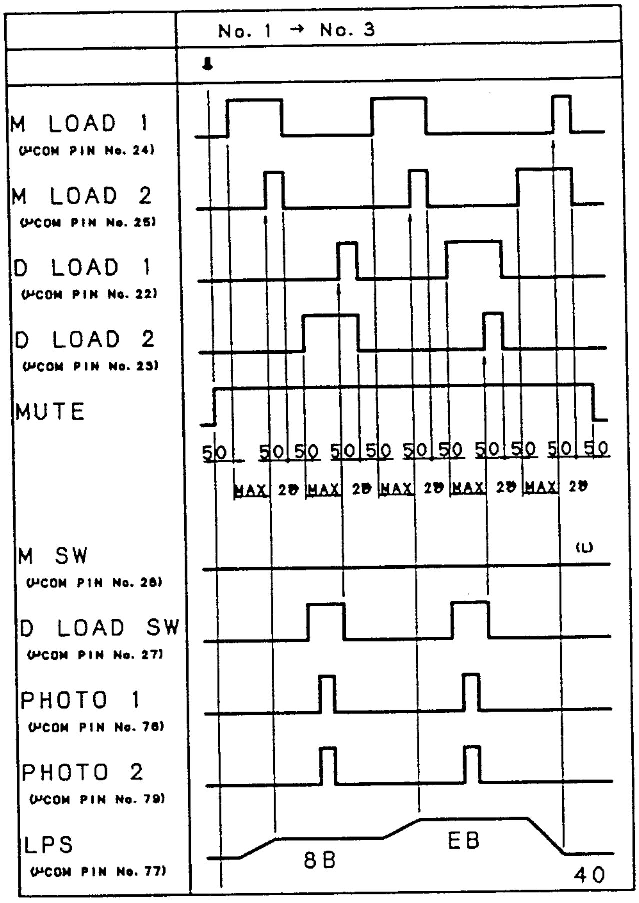
10.ディスク ローディング状態チェック：

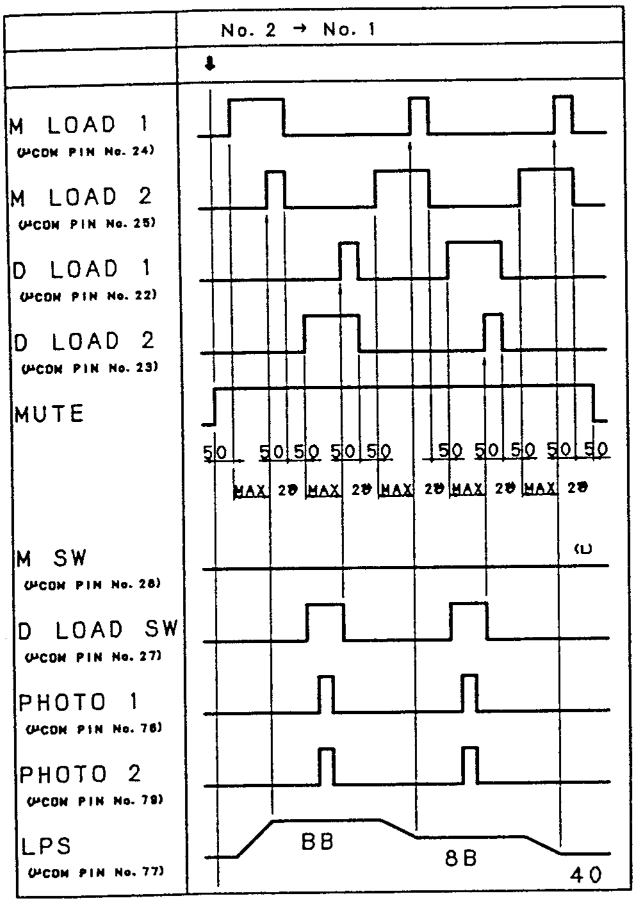
ディスクがメカへ動く状態は2つのフォトセンサー（PT701, PT702）によってチェックされる。IC601ピン#76とピン#79の電圧は、両方のフォトセンサーに制御されてLow→High→Lowに変わる。このことは、ディスク ローディングが終了したことを意味する。

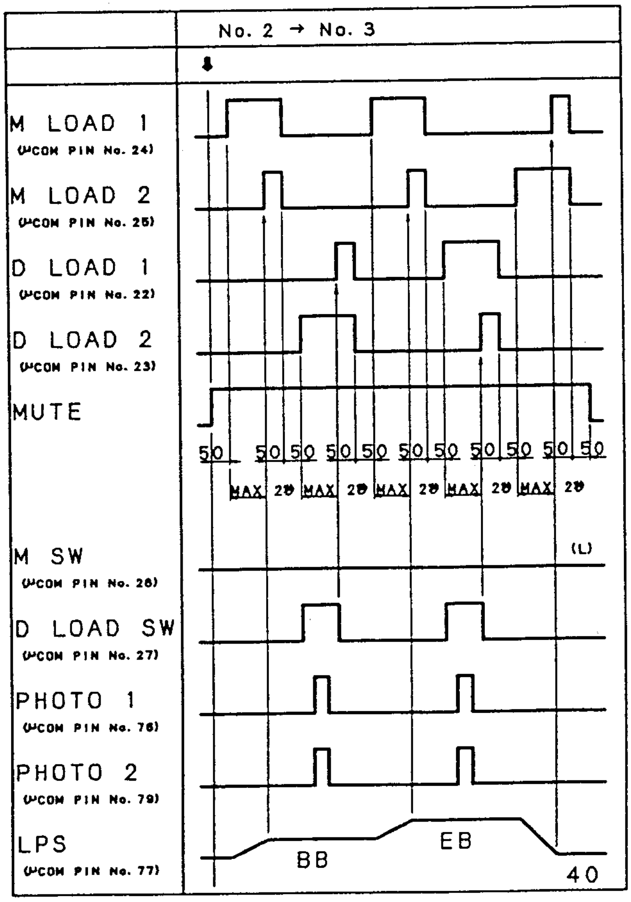
11.トレイ マガジン移入：

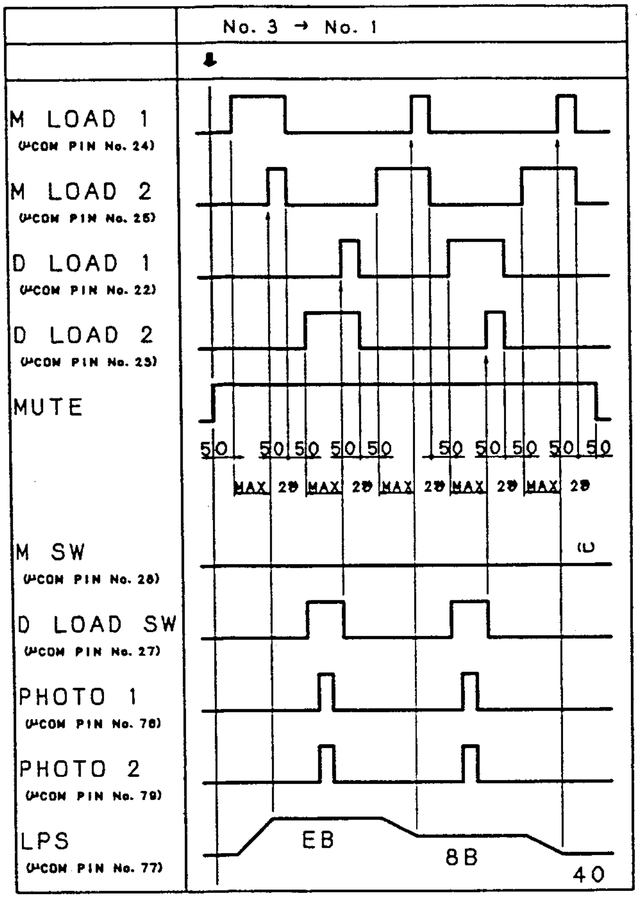
IC601ピン#76とピン#79の電圧が、両方のフォトセンサーに制御されてLow→High→Lowに変わり、ロードSW（IC601ピン#27）がONになった後、IC601ピン#25（トレイBWD）は5Vを出力し、IC702ピン#3から マガジン トレイ モーター（トレイ モーターーBWD側ー黒線）に7Vが供給され、マガジン トレイを元に戻し、LPS HEX値が40ホーム ポジションになるまでディスクがチャッキングされる。

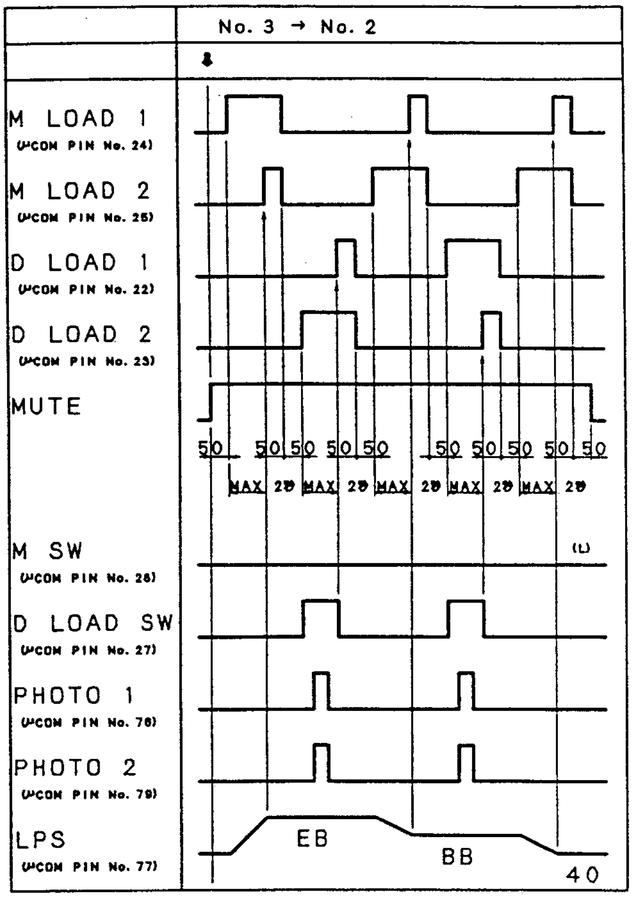

No. 1 → No. 2
M LOAD 1
(μCOM PIN No. 24)
M LOAD 2
(μCOM PIN No. 25)
D LOAD 1
(μCOM PIN No. 22)
D LOAD 2
(μCOM PIN No. 23)
MUTE
50 50 50 50 50 50 50 50 50 50 50
MAX 20 MAX 20 MAX 20 MAX 20 MAX 20
M SW
(μCOM PIN No. 28)
(L)
D LOAD SW
(μCOM PIN No. 27)
PHOTO 1
(μCOM PIN No. 78)
PHOTO 2
(μCOM PIN No. 79)
LPS
(μCOM PIN No. 77)
8B
BB
40

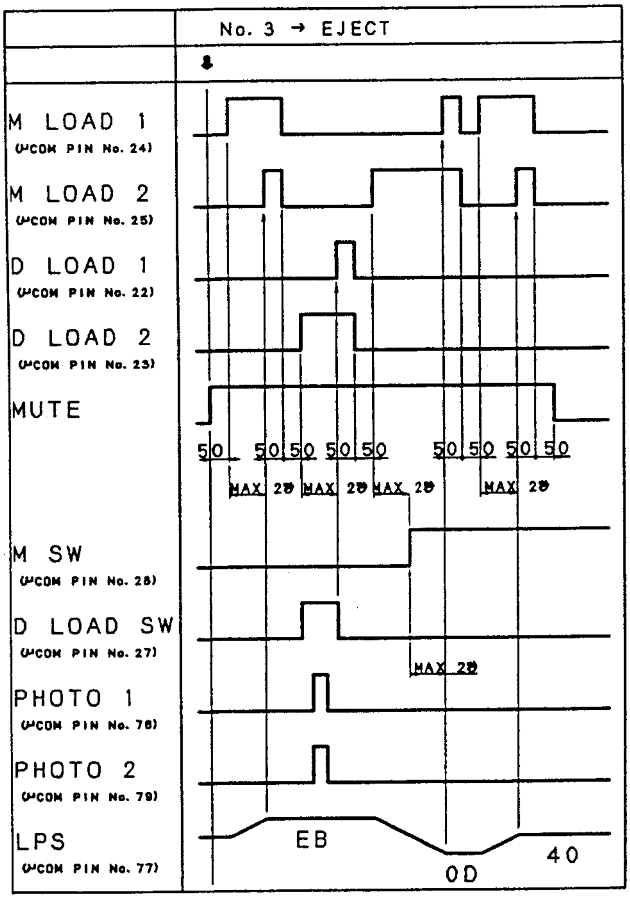

No. 1 → No. 3
M LOAD 1
(μCOM PIN No. 24)
M LOAD 2
(μCOM PIN No. 25)
D LOAD 1
(μCOM PIN No. 22)
D LOAD 2
(μCOM PIN No. 23)
MUTE
50 50 50 50 50 50 50 50 50 50 50
MAX 20 MAX 20 MAX 20 MAX 20 MAX 20
M SW
(μCOM PIN No. 28)
(L)
D LOAD SW
(μCOM PIN No. 27)
PHOTO 1
(μCOM PIN No. 78)
PHOTO 2
(μCOM PIN No. 79)
LPS
(μCOM PIN No. 77)
8B
EB
40


No. 2 → No. 1
M LOAD 1
(μCOM PIN No. 24)
M LOAD 2
(μCOM PIN No. 25)
D LOAD 1
(μCOM PIN No. 22)
D LOAD 2
(μCOM PIN No. 23)
MUTE
50 50 50 50 50 50 50 50 50 50 50
MAX 20 MAX 20 MAX 20 MAX 20 MAX 20
M SW
(μCOM PIN No. 28)
(L)
D LOAD SW
(μCOM PIN No. 27)
PHOTO 1
(μCOM PIN No. 78)
PHOTO 2
(μCOM PIN No. 79)
LPS
(μCOM PIN No. 77)
BB
8B
40


No. 2 → No. 3
M LOAD 1
(μCOM PIN No. 24)
M LOAD 2
(μCOM PIN No. 25)
D LOAD 1
(μCOM PIN No. 22)
D LOAD 2
(μCOM PIN No. 23)
MUTE
50 50 50 50 50 50 50 50 50 50 50
MAX 20 MAX 20 MAX 20 MAX 20 MAX 20
M SW
(μCOM PIN No. 28)
(L)
D LOAD SW
(μCOM PIN No. 27)
PHOTO 1
(μCOM PIN No. 78)
PHOTO 2
(μCOM PIN No. 79)
LPS
(μCOM PIN No. 77)
BB
EB
40


No. 3 → No. 1
M LOAD 1 (μCOM PIN No. 24)
M LOAD 2 (μCOM PIN No. 25)
D LOAD 1 (μCOM PIN No. 22)
D LOAD 2 (μCOM PIN No. 23)
MUTE
50 50 50 50 50 50 50 50 50 50 50
MAX 20 MAX 20 MAX 20 MAX 20 MAX 20
M SW (μCOM PIN No. 28)
(L)
D LOAD SW (μCOM PIN No. 27)
PHOTO 1 (μCOM PIN No. 78)
PHOTO 2 (μCOM PIN No. 79)
LPS (μCOM PIN No. 77)
EB
8B
40


No. 3 → No. 2
M LOAD 1 (μCOM PIN No. 24)
M LOAD 2 (μCOM PIN No. 25)
D LOAD 1 (μCOM PIN No. 22)
D LOAD 2 (μCOM PIN No. 23)
MUTE
50 50 50 50 50 50 50 50 50 50 50
MAX 20 MAX 20 MAX 20 MAX 20 MAX 20
M SW (μCOM PIN No. 28)
(L)
D LOAD SW (μCOM PIN No. 27)
PHOTO 1 (μCOM PIN No. 78)
PHOTO 2 (μCOM PIN No. 79)
LPS (μCOM PIN No. 77)
EB
BB
40


No. 3 → EJECT
M LOAD 1 (μCOM PIN No. 24)
M LOAD 2 (μCOM PIN No. 25)
D LOAD 1 (μCOM PIN No. 22)
D LOAD 2 (μCOM PIN No. 23)
MUTE
50 50 50 50 50 50 50 50 50 50 50
MAX 20 MAX 20 MAX 20 MAX 20
M SW (μCOM PIN No. 28)
D LOAD SW (μCOM PIN No. 27)
MAX 20
PHOTO 1 (μCOM PIN No. 78)
PHOTO 2 (μCOM PIN No. 79)
LPS (μCOM PIN No. 77)
EB
0D
40

III. イジェクト動作（ディスク#1→イジェクト）

1.イジェクトSW ON：

イジェクトSWを押す。

2.マガジントレイ移動：

メインコントロールIC (IC601)ピン#24はIC702モータードライブICに5Vを出力し、IC702ピン#5からマ ガジン トレイ モーター（トレイ モーターFWD側一赤線）に7Vが供給され、LPS HEX値が86ディスク#1ポジションになるまでマガジン トレイを動かす。

3.マガジントレイ停止：

IC702ピン#3からマガジン トレイ モーター（トレイ モーターBWD側一黒線）に7Vが供給され、LPS HEX値が86になるとマガジン トレイが停止する。

4.ディスク アンローディング：

50msのWAIT後、メインコントロールIC (IC601)ピン#23はIC702モータードライブICに5Vを出力し、IC702ピン#10からロード モーター（ロード モーターBWD側）に7Vが供給され、ディスクをメカからマガジンへ戻す。

5.ディスク アンローディング状態：

ディスクがメカへ戻る状態は2つのフォトセンサー（PT701, PT702）によってチェックされる。IC601ピン#76とピン#79の電圧は、両方のフォトセンサーに制御されてHigh→Lowに変わる。このことは、ディスク アンローディングが終了したことを意味する。

6.ディスク ローディング モーター停止：

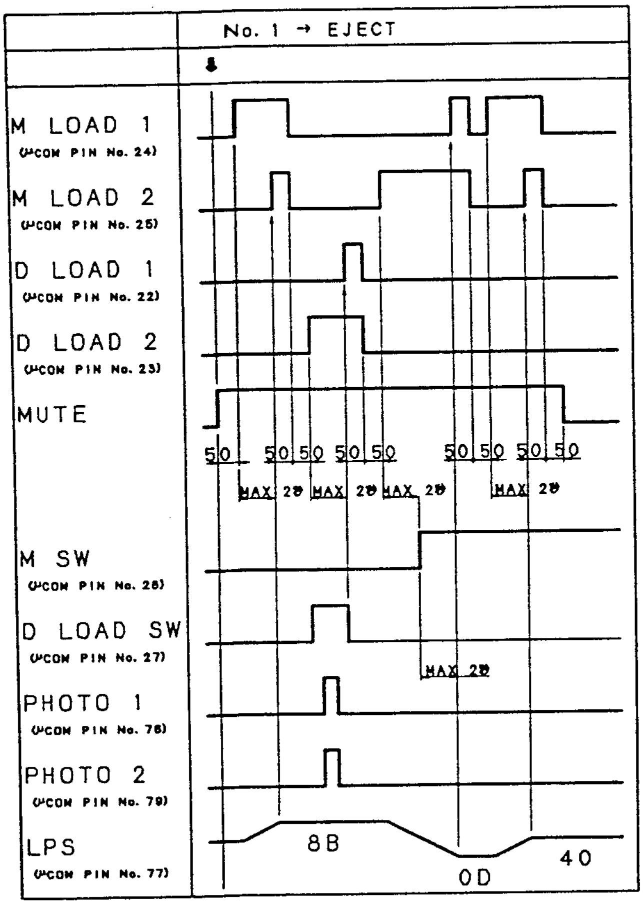
IC601ピン#76とピン#79の電圧が、両方のフォトセンサーに制御されてHigh→Lowに変わり、ロードSWがHigh→Lowになった後、IC601ピン#22（ロードFWD）は5Vを出力し、IC702ピン#12から7Vが供給されディスク ロード モーターが停止する。（ロード モーターFWD側）。

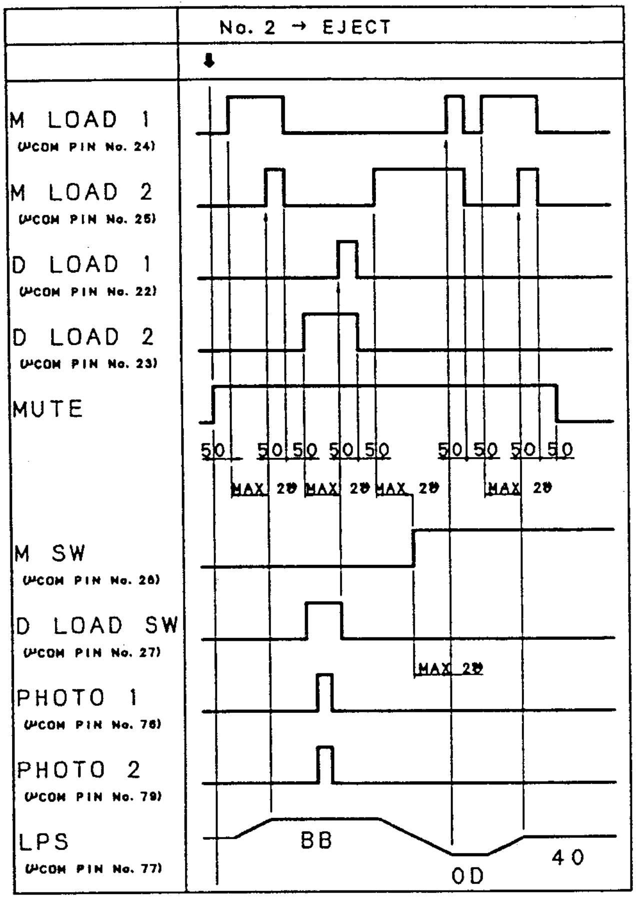
7.マガジン イジェクト：

メインコントロールIC (IC601)ピン#25はIC702モータードライブICに5Vを出力し、IC702ピン#3からマガジン トレイ モーター（トレイ モーターBWD側一黒線）に7Vが供給され、LPS HEX値が0Dディスク イジェクトポジションになり、マガジン ロック レバーのロックが解除するまでマガジン トレイを動かす。

8.トレイをホーム ポジションにセットする：

メインコントロールIC (IC601)ピン#24はIC702モータードライブICに5Vを出力し、IC702ピン#5からマガジン トレイ モーター（トレイ モーターFWD側一赤線）に7Vが供給され、LPS HEX値が40ホーム ポジションになるまでマガジン トレイを動かす。


No. 1 → EJECT
M LOAD 1
(μCOM PIN No. 24)
M LOAD 2
(μCOM PIN No. 25)
D LOAD 1
(μCOM PIN No. 22)
D LOAD 2
(μCOM PIN No. 23)
MUTE
50 50 50 50 50 50 50 50 50 50
MAX 20 MAX 20 MAX 20 MAX 20
M SW
(μCOM PIN No. 28)
D LOAD SW
(μCOM PIN No. 27)
MAX 20
PHOTO 1
(μCOM PIN No. 78)
PHOTO 2
(μCOM PIN No. 79)
LPS
(μCOM PIN No. 77)
8B
0D
40


No. 2 → EJECT
M LOAD 1
(μCOM PIN No. 24)
M LOAD 2
(μCOM PIN No. 25)
D LOAD 1
(μCOM PIN No. 22)
D LOAD 2
(μCOM PIN No. 23)
MUTE
50 50 50 50 50 50 50 50 50 50
MAX 20 MAX 20 MAX 20 MAX 20
M SW
(μCOM PIN No. 28)
D LOAD SW
(μCOM PIN No. 27)
MAX 20
PHOTO 1
(μCOM PIN No. 78)
PHOTO 2
(μCOM PIN No. 79)
LPS
(μCOM PIN No. 77)
BB
0D
40

2. 各SWの割り込み時間と確定

SW名称	割り込み時間	確定方法
M SW	10 ms	二度一致
D LOAD SW	10 ms	二度一致
PHOTO 1	10 ms	二度一致
PHOTO 2	10 ms	二度一致
LPS	1 ms	一度確定

3. エラー動作

I. LPS異常

LPSが正規のポジションに移動しないとき、エラーコード（ERROR）が表示されタイミングチャートはそれ以上何も実行しない。ユニットは停止し、イジェクトのみ受け付けること。

II. ディスク ローディング／アンローディング異常

ディスク交換中（タイミング チャート実行中）における最初のディスク検出でエラーが発生すると、100msのUP EDGEの検出後、同動作が再度実行される。もし、それでも正常に動作しない場合は、エラーコード（ERROR）が表示され、ユニットは停止する。（ディスク交換用キーとイジェクトは受け付けること。）

III. ERROR時の処理

ERROR時の処理

	1	2	3	4	5	ステップ
1	A	B	A	C	D	
2	A	B	A	C	D	
3	A	B	D	C	D	
4	A	B	A	C	D	
5	A	B	D	C	D	
6	A	B	D	C	D	
7	A	B	E	D	A	
8	A	B	E	D	A	
9	A	B	E	D	A	
10	A	B	D	-	-	
タイミング						

IV. 不良の原因

	不良の原因	処理内容
A	LPS不良	EJECT KEY入力後、再度TRYさせる。
B	ディスクをマガジンに戻す時の不良	再度、逆転を掛け、D LOAD SW検出後TRYさせる。
C	ディスクをイジェクトする時の不良	PHOTO1とPHOTO2の入力が検出できないときは、逆転を掛けD LOAD SW検出後、次のディスクに移行する。どちらかの片方のPHOTOが検出できたときは、逆転を掛けD LOAD SW検出後再度TRYさせる。
D	LPS不良	EJECT KEY入力後、再度TRYさせる。
E	LPS不良	100msec後再度TRYさせ、LPSが13以下になっているときは、EJECT完了と判断する。

4. ACC OFF時の動作

ACC OFFの処理

モード移行中に、ACCがOFFになった場合は、現在実行中のタイミング チャートが終了後、STAND BY MODEに入る。

5. 強制STAND BY動作

強制STAND BY

モード移行中に、B-HOLDを検知した場合は、直ちにタイミング チャート実行を中断してSTAND BY MODEに移行する。また、復帰した場合は、強制STAND BY以前に実行していたステップを再度実行。

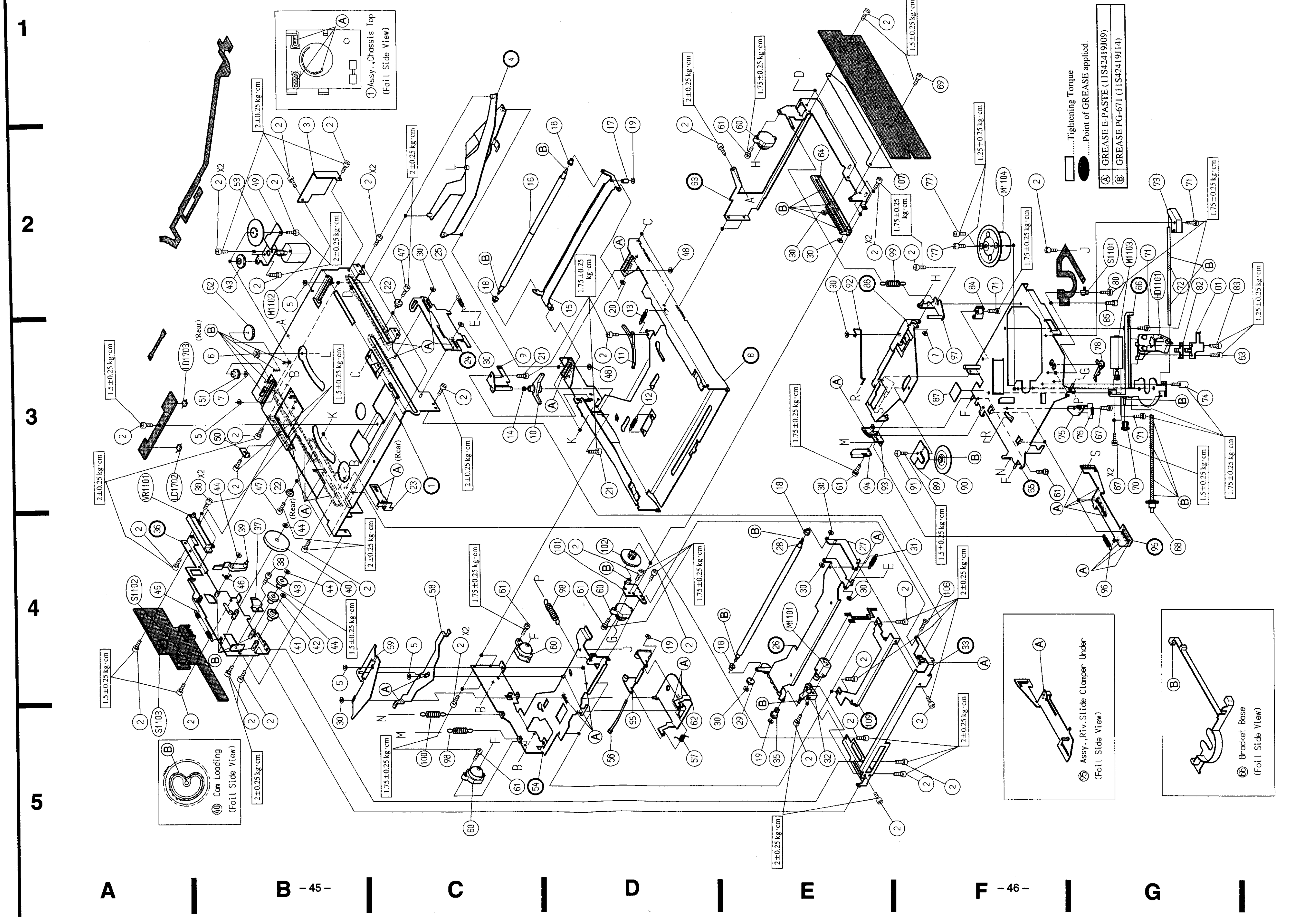
6. 強制イニシャライズ

M SW	D LOAD SW	PHOTO 1	PHOTO 2	メカの状態	次の動作
L	H	L	L	マガジン無し	マガジン挿入待ち
		H	L	異物挿入 （ディスク含む）	E-01表示
		L	H		
		H	H		
H	H	L	L	ディスク・チャッキング マガジン挿入のみ	PLAY動作
不定	L	L	H	ディスク・チェンジ中	チャッキング動作
		H	L	場合によっては、位置補正処理を行う。	
		H	H		
		L	L		
	その他			ERROR	ERROR表示

備考
PLAY動作に移行する前にLPSの値を読み、範囲に入っていない場合には、位置補正処理を行う。（処理は別紙参照）
その後、TOCを読みPAUSE待機にする。
但し、TOCを読めないときはディスクがチャッキングされていない場合があるため、ディスクイジェクト動作に移行し、モード終了後タイミング チャートを実行しNO.1のディスクをローディングする。
また、ディスク イジェクト時PHOTO1および２のHigh→Lowを検知した場合は、TOCが読めないディスクが入っていたと判断し、その時のLPSの値より現在のDISC位置を割り出し、次のディスクをローディングする。

MEMO

Exploded View (CD Mechanism)


1
2
3
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A
B
C
D
E
F
G
① Assy.,Chassis Top (Foil Side View)
㊵ Cam Loading (Foil Side View)
(95) Assy.,Riv.Slide Clamper Under (Foil Side View)
(66) Bracket Base (Foil Side View)
Tightening Torque
Point of GREASE applied.
Ⓐ GREASE E-PASTE (11S42419J09)
Ⓑ GREASE PG-671 (11S42419J14)
1.5±0.25 kg·cm
1.75±0.25 kg·cm
2±0.25 kg·cm
1.25±0.25 kg·cm
(Rear)
X2
M1101
M1102
M1103
M1104
S1101
S1102
S1103
VR1101
D1101
LD1702
LD1703

CD Mechanism Assembly Parts List

NOTE:No parts number on parts list are not supplied.

Symbol No.	Index	Part No.	Description
2		03S94385F19	Screw, Pan Nylok (M2X2.5)
3	1-B	07A81784W01	Bracket, Rear Corner
5		04B41345P22	Washer, Lock (M2.6)
6	3-B	04B41345P05	Washer, Lock (M3.5)
7		04B41345P02	Washer, Lock (M1.7)
9	3-C	01A81188W01	Assy., Riv. Bracket Tray
10	3-C	45A80903W01	Arm, Magazine
11	3-D	43B80926W01	Spacer, Disc
12	3-D	41B81272W02	Spring, Coil
13	2-D	41B81272W07	Spring, Coil
14	3-C	41A81207W01	Spring, Arm Magazine
15	2-D	01B81196W01	Assy., Riv. Bracket Roller Upper
16	2-C	01A81172W01	Assy., Shaft Roller Upper
17	1-D	47A80928W01	Roller, Disc Guide
18		43A31616W01	Bush
19		04B41345P42	Washer, Lock (M1.2)
20	2-D	04S40075G15	Washer (M3.6)
21	3-D	03S94385F07	Screw, Pan Nylok (M2X2)
22		43A81198W01	Sleeve
23	3-C	45A80863W01	Slide, Eject Magazine
25	2-C	41B81272W03	Spring, Coil
27	4-E	01A81249W01	Assy., Riv. Bracket RR
28	4-E	01A81173W01	Assy., Shaft Roller Under
29	5-E	44A80895W01	Gear, Roller Under
30		04B41345P13	Washer, Lock (M1.7)
31	4-F	41B81272W04	Spring, Coil
32	5-E	01A81170W01	Assy., Riv. Bracket Load
35	5-E	44A80893W01	Gear, Middle
37	4-B	41A80865W01	Spring, Arm Magazine
38		03S94385F28	Screw, Pan Nylok (M1.7X2)
39	4-B	45A80885W01	Arm, Eject Switch
40	4-B	45B80879W01	Cam, Loading
41	4-B	44B80880W01	Gear, Loading (A)
42	4-B	44B80881W01	Gear, Loading (B)
43		44A80867W01	Gear, Idle (A)
44		04B41345P04	Washer, Lock (M2.6)
45	4-A	41B81272W08	Spring, Coil
46	4-B	41A81382W01	Spring, Switch Magazine
47		03S94385F08	Screw, Pan Nylok (M2X3)
48		04C42091G11	Ring, "E" (M2.5)
49	2-B	07A80871W01	Bracket, Tray Motor
50	3-B	07A81365W01	Bracket, Tray Stopper
51	3-B	44A80868W01	Gear, Idle (B)
52	2-B	44A80869W01	Gear, Idle (C)
53	2-B	44A80870W01	Gear, Cam
55	5-D	01A81823W01	Assy., Riv. Disc Guide
56	5-D	47A31658W01	Shaft, Arm
57	5-D	41A32137W01	Spring, Disc Guide
58	4-C	45A80908W01	Lever, Drive Lock
59	4-C	45A80922W01	Lever, Drive Lock (B)
60		75C80020W01	Damper, DPH2
61		03S40014G82	Screw, W/Washer (M2X3.5)
62	5-D	01A81189W01	Assy., Riv. Bracket Guide
64	2-E	44B80916W01	Rack, Timing
67	3-G	03S40014G66	Screw, W/Washer (M2X3.5)
68	4-G	01V84900W37	Assy., Lead Screw
69	1-F	03S44205G99	Screw, Bind (M2X3)
70	3-G	44A81241W01	Gear, Middle
71		03S40014G86	Screw, W/Washer (M2X7.5)
72	2-G	47A50698W01	Shaft, Pick-Up
73	2-G	07A81236W01	Bracket, Shaft
74	3-G	47A81245W01	Shaft, Screw Drive
75	3-F	07B81235W01	Bracket, Rod Lifter
76	3-G	41B81272W09	Spring, Coil
77	2-F	03S94385F57	Screw, Pan Nylok (M1.7X3.5)
78	3-G	45A81239W01	Lever, Switch
80	2-G	03S40014G02	Screw, W/Washer (M2X6)
81	2-G	41A81243W01	Spring, Nut (A)
82	2-G	44A81238W01	Spring, Nut (B)
83		03S94385F02	Screw, Pan Nylok (M1.7X3)
84	2-F	07A81237W01	Bracket, FPC PD/LD
85	2-G	03S72235F76	Screw, Pan (M2X2)
87	3-F	14S81641W21	Insulator, Drive
89	3-F	07A80919W01	Bracket, Clamper Top
90	3-F	43B81255W01	Table, Clamper
91	3-F	03S94385F54	Screw, Pan Nylok (M1.7X1.4)
92	2-E	47A81252W01	Rod, Lifter
93	3-E	45A80932W01	Cam, Clamper
94	3-E	07A90578W01	Bracket, Guide Disc
96	4-G	41B81272W01	Spring, Coil
97	3-F	01A81175W01	Assy., Riv. Bracket Arm Clamper
98		41B81272W05	Spring, Coil
99	2-E	41B81272W06	Spring, Coil
100	5-C	41B81272W10	Spring, Coil
101	4-D	01A81171W01	Assy., Riv. Damper FR
102	4-D	44A80912W01	Gear, Timing
106	4-F	03S94385F36	Screw, Countersink Nylok (M2X3)
107	2-F	14A81834W01	Insulator, Servo

Symbol No.	Index	Part No.	Description
Miscellaneous			
HD1101	2-G	88T85429W01	Pick-Up Unit, SF-U3000RAP
LD1702	3-A	48T16057W03	LED, AN501-4 (RED)
LD1703	3-A	48T16057W03	LED, AN501-4 (RED)
M1101	4-E	01V84800W95	Assy., Loading Motor (7V-370mA)
M1102	2-B	01V84800W95	Assy., Tray Motor (7V-370mA)
M1103	2-G	01V84900W36	Assy., Sled Motor (7V-370mA)
M1104	4-F	01V84900W34	Assy., Spindle Motor (3V-90mA)
S1101	2-G	40T71025F03	Switch, Detector (LIMIT)
S1102	4-A	40T25956W01	Switch, Detector (LOADING)
S1103	5-A	40T25956W01	Switch, Detector (MAGAZINE)
VR1101	3-A	18T55678W02	Volume, Slide 10K ohm (LINEAR POSITION SENSOR)

Symbol No.	Index	Part No.	Description

ALPINE®

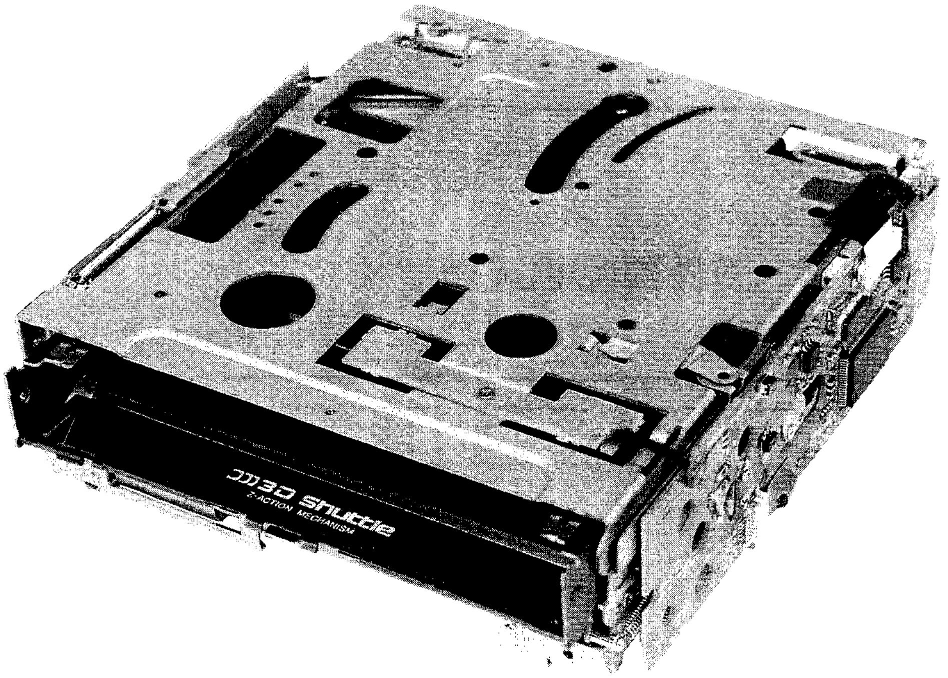
SERVICE MANUAL

In-dash CD Changer Mechanism

3D Shuttle

ADDENDUM & REVISED

- This manual is described on DS44L01A only. The DS44L01A is developed from DS-L SERIES. For information that is not mentioned in this service manual, refer to the Service Manual • DS-L SERIES (68E24698S01).
- 当マニュアルはDS44L01Aについてのみ記載しております。又、DS-L SERIESがベースモデルとなっておりますので、相違部分のみ記載しております。詳細についてはDS-L SERIES (68E24698S01) を参照願います。



● DS-L SERIES

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CD Mechanism Assembly Parts List

NOTE : For the parts not mentioned, refer to the Service Manual for DS-L SERIES (Part No. 68E24698S01).

Model	DS-L SERIES			DS44L01A		
Symbol No.	Index	Part No.	Description	Index	Part No.	Description
69	1-F	03S44205G99	Screw, Bind (M2X3)	1-F	03A91058W01	Screw, Special (M2X3.4)
110		—	—	5-E	75A10147Y01	Rubber, Ring
111		—	—	3-G	07A10361Y01	Stopper, Shaft
112		—	—	3-G	43A10362Y01	Bush, Bracket
113		—	—	3-G	03S70494F15	Screw, Pan (M2X4)
114		—	—	3-A	07A90638W01	Bracket, Cover DIN

キャビネット関係部品相違表

※ 記載されていない部品については、サービスマニュアル・DS-L SERIES (Part No. 68E24698S01) を参照願います。

Model	DS-L SERIES				DS44L01A			
記号	索引	部品番号	部品名	標準卸価格	索引	部品番号	部品名	標準卸価格
69	1-F	03S44205G99	Screw, Bind (M2X3)	45	1-F	03A91058W01	Screw, Special (M2X3.4)	50
110		—	—	—	5-E	75A10147Y01	Rubber, Ring	110
111		—	—	—	3-G	07A10361Y01	Stopper, Shaft	—
112		—	—	—	3-G	43A10362Y01	Bush, Bracket	—
113		—	—	—	3-G	03S70494F15	Screw, Pan (M2X4)	45
114		—	—	—	3-A	07A90638W01	Bracket, Cover DIN	80

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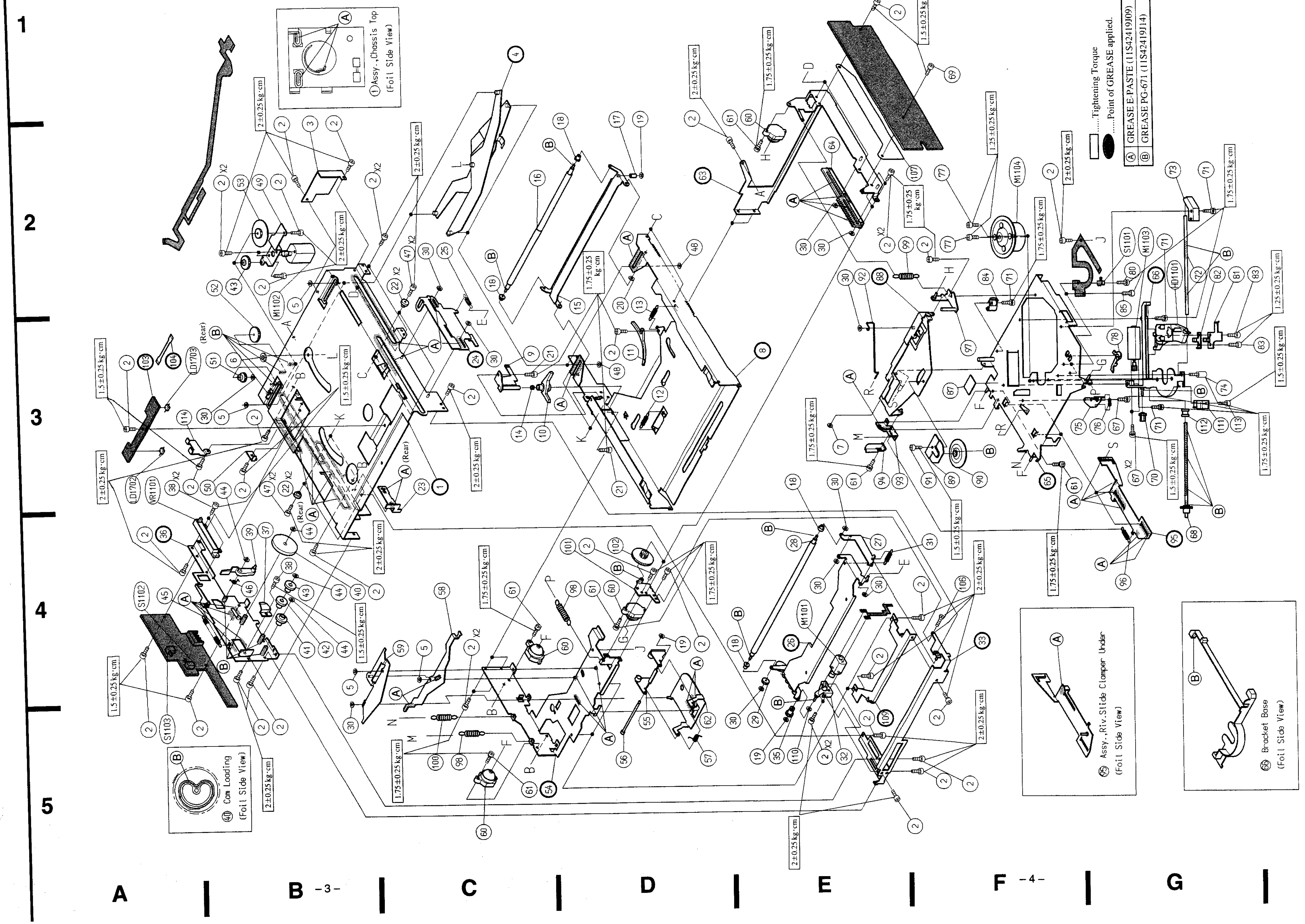
Exploded View (CD Mechanism)



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